



# SHADAN COLLEGE OF ENGINEERING & TECHNOLOGY

Established by SHADAN EDUCATIONAL SOCIETY.  
Approved by A.I.C.T.E and Affiliated to JNTUH, Hyderabad.  
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Date: 06/09/2021

## Criteria-3.3.2

**Number of Research Papers per Teachers in the Journals Published  
by ECE dept teachers during the last five Years**

Sr.No.	Academic Year	Number of Papers Published
1	2019-2020	27
2	2018-2019	32
3	2017-2018	34
4	2016-2017	21
5	2015-2016	26



  
PRINCIPAL  
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**3.3.2 Number of research papers per teachers in the Journals notified on UGC website during the last five years by ECE Department**

Sr. No.	Title of paper	Name of the author/s	Department of the teacher	Name of journal	Year of publication	ISSN number	Link to the recognition in UGC enlistment of the Journal /Digital Object Identifier (doi) number		Is it listed in UGC Care list/Scopus/Web of Science/other, mention
							Link to website of the Journal	Link to article/paper/abstract of the article	
<b>2019-20</b>									
1	Lifetime and Performance Enhancement in WSN by Energy-Buffer Residual Status of Nodes and The Multiple Mobile Sink	Amairullah Khan Lodhi, M. S. S. Rukmini, Syed Abdulsattar	ECE	TEST Engineering and Management	2019-2020	ISSN 2278-3091, Volume 8, No.1.3, 2019	<a href="http://www.testmagzine.biz/">http://www.testmagzine.biz/</a>	<a href="http://www.testmagzine.biz/index.php/testmagzine/article/view/1446/1306">http://www.testmagzine.biz/index.php/testmagzine/article/view/1446/1306</a>	Scopus
2	Performance improvement in wireless sensor networks by removing the packet drop from the node buffer	Amairullah Khan Lodhi, MSS Rukmini, Syed Abdulsattar, Shaikh Zeba Tabassum	ECE	International Journal of Science, Technology and Management	2019-2020	Volume 26, Part 2, 2020, Pages 2226-2230	<a href="https://doi.org/10.1016/j.matpr.2020.02.483">https://doi.org/10.1016/j.matpr.2020.02.483</a>	<a href="https://www.sciencedirect.com/science/article/pii/S2214785320312384">https://www.sciencedirect.com/science/article/pii/S2214785320312384</a>	Elsvier





3	Performance Improvement in Wireless Sensor Networks by Removing the Packet Drop from the Node Buffer	Amairullah Khan Lodhi, M. S. S. Rukmini, Syed Abdulsattar	ECE	ICMPC-2020 (GLA University)	2019-2020		<a href="https://www.science-direct.com/">https://www.science-direct.com/</a>	<a href="https://www.sciencedirect.com/science/article/pii/S2214785320312384?via%3Dihub">https://www.sciencedirect.com/science/article/pii/S2214785320312384?via%3Dihub</a>	Springer
4	Lifetime Enhancement Based on Energy and Buffer Residual Status of Intermediate Node in Wireless Sensor Networks	Amairullah Khan Lodhi, M. S. S. Rukmini, Syed Abdulsattar	ECE	ICASIC-2020 (VIT, Vellore)	2019-2020	ISSN 0975-6876	<a href="https://www.science-direct.com/">https://www.science-direct.com/</a>	<a href="https://www.sciencedirect.com/science/article/pii/S2214785320312384?via%3Dihub">https://www.sciencedirect.com/science/article/pii/S2214785320312384?via%3Dihub</a>	UGC
5	RASPBERRY PI BASED SMART DRIP IRRIGATION SYSTEM	Shaik saidulu & others	ECE	Journal of Information and Computational Science	2019-2020	Volume 11, Issue 3, 220-227, ISSN: 1548-7741	<a href="https://drive.google.com/file/d/1XRavvs3ZH2ShgHImhtU_zChe2SfID1Wq/view">https://drive.google.com/file/d/1XRavvs3ZH2ShgHImhtU_zChe2SfID1Wq/view</a>	Scopus	
6	Analysis Of Power Leakage Controlling In 7s Sram Cell Using Self - Controlling Technique For High Security Data Transformation	Shaik saidulu & others	ECE	International Journal of Future Generation Communication And Networking	2019-2020	Vol. 14, Issue No 1, pg:1028-1038, ISSN: 2233-7857/JIFGCN	<a href="http://www.sersc.org/journal/index.php/JIFGCN/article/view/36058/19925">http://www.sersc.org/journal/index.php/JIFGCN/article/view/36058/19925</a>	Scopus	
7	HIGH SPEED DYNAMIC SHIFT REGISTER FOR CONVOLUTION ENCODING AND VITERBI DECODING	Mohd Ilyas	ECE	International Journal of Advanced Science and Technology	2019-2020	Vol. 29, ISSN:2005-4238, Pg:613-619, Issue: 5s	<a href="https://www.researchgate.net/">https://www.researchgate.net/</a>	<a href="https://www.researchgate.net/publication/340827853-HIGH-SPEED-DYNAMIC-SHIFT-REGISTER-FOR-CONVOLUTION-ENCODING-AND-VITERBI-DECODING">https://www.researchgate.net/publication/340827853-HIGH-SPEED-DYNAMIC-SHIFT-REGISTER-FOR-CONVOLUTION-ENCODING-AND-VITERBI-DECODING</a>	Scopus



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8	Cluster Head Selection by Optimized Ability to Restrict Packet Drop in Wireless Sensor Networks	Amairullah Khan Lodhi, Syed Abdul Sattar	ECE	SCDA	2019-2020	Soft Computing in Data Analytics (pp.453-461)	<a href="https://www.researchgate.net/publication/327162122">https://www.researchgate.net/publication/327162122</a>	Cluster Head Selection by Optimized Ability to Restrict Packet Drop in Wireless Sensor Networks	Springer
9	Efficient Energy Routing Protocol Based on Energy & Buffer Residual Status (EBRS) for Wireless Sensor Networks	Syed Abdul Sattar Amairullah Khan Lodhi, M.S.S. Rukmini	ECE	IJEAT	2019-2020	ISSN: 2249 – 8958, Volume-9 Issue-1S5, December, 2019	<a href="https://www.ijeat.org/">https://www.ijeat.org/</a>	<a href="https://www.ijeat.org/wp-content/uploads/papers/v9/i1s5/A10081291SS52019.pdf">https://www.ijeat.org/wp-content/uploads/papers/v9/i1s5/A10081291SS52019.pdf</a>	Scopus
10	Energy-Efficient Routing Protocol Based on Mobile Sink Node in Wireless Sensor Networks	Syed Abdulsattar Amairullah Khan Lodhi, M. S. S. Rukmini	ECE	IJITEE	2019-2020	ISSN: 2278-3075, Volume-8 Issue-7, May, 2019	<a href="https://www.ijitee.org/">https://www.ijitee.org/</a>	<a href="https://www.ijitee.org/wp-content/uploads/papers/v8/i7/G5316058719.pdf">https://www.ijitee.org/wp-content/uploads/papers/v8/i7/G5316058719.pdf</a>	Scopus
11	Energy-Efficient Routing Protocol for Node Lifetime Enhancement in Wireless Sensor Networks	Amairullah Khan Lodhi, M. S. S. Rukmini	ECE	IJATCSE	2019-2020	ISSN 2278-3091, Volume 8, No.1.3, 2019	<a href="http://www.warse.org/IJATCSE/static/pdf/ijatcse05813s12019.pdf">http://www.warse.org/IJATCSE/static/pdf/ijatcse05813s12019.pdf</a>	Scopus	
12	Network Lifetime Enhancement in WSN Using Energy and Buffer Residual Status with Efficient Mobile Sink Location Placement	Amairullah Khan Lodhi, M. S. S. Rukmini	ECE	JSSST	2019-2020	ISSN 0038-111X, Volume 8, No.1.3, 2019	<a href="https://solidstatetechnology.us/index.php/JSSST/article/view/373">https://solidstatetechnology.us/index.php/JSSST/article/view/373</a>	Scopus	





13	A Feasible Model for a Smart Transportation System using a Vehicular Ad-Hoc Network	SA Mazher Khan, Amairullah Khan Lodhi, Sayyad Aji, M.S.S Rukmini	ECE	TEST Engineering and Management	2019-2020	ISSN 2278-3091, Volume 8, No.1.3, 2019	<a href="http://www.testmagzine.biz/">http://www.testmagzine.biz/</a>	<a href="http://www.testmagzine.biz/index.php/testmagzine/article/view/1446/1306">http://www.testmagzine.biz/index.php/testmagzine/article/view/1446/1306</a>	Scopus
14	Design Technique for Head Selection in WSNs to Enhance the Network Performance Based on Nodes Residual Status: an Extension to EBRS Method	SA Mazher Khan, Amairullah Khan Lodhi, Shaikh Zeba Tabassum, M.S.S Rukmini	ECE	IJAST	2019-2020	Vol. 29 No. 05 (2020)	<a href="http://serse.org/journals/index.php/IJAST/">http://serse.org/journals/index.php/IJAST/</a>	<a href="http://serse.org/journals/index.php/IJAST/article/view/12048">http://serse.org/journals/index.php/IJAST/article/view/12048</a>	Scopus
15	LOW PASS – IIR FILTER DESIGN ON POSIT NUMBERS FORMAT USING VERILOG	Dr. Mohammed Ilyas Mr. Kamel Alikhan Siddiqui, Mr. Amairullah Khan Lodhi	ECE	Journal of Critical Reviews	2019-2020	ISSN- 2394-5125 VOL 7, ISSUE 19, 2020	<a href="http://www.icreview.com/fulltext/197-1596877422.pdf">doi: 10.31838/icr.07.19.363</a>	<a href="http://www.icreview.com/fulltext/197-1596877422.pdf">http://www.icreview.com/fulltext/197-1596877422.pdf</a>	Scopus
16	LOW PASS – IIR FILTER DESIGN ON POSIT NUMBERS FORMAT USING VERILOG	Mr. Amairullah Khan Lodhi, Dr. Mohammed Ilyas Mr. Kamel Alikhan Siddiqui	ECE	Journal of Critical Reviews	2019-2020	ISSN- 2394-5125 VOL 7, ISSUE 19, 2020	<a href="http://www.icreview.com/fulltext/197-1596877422.pdf">doi: 10.31838/icr.07.19.363</a>	<a href="http://www.icreview.com/fulltext/197-1596877422.pdf">http://www.icreview.com/fulltext/197-1596877422.pdf</a>	Scopus



17	DESIGN & IMPLEMENTATION OF SINGLE ELECTRON TRANSISTOR (SET)	Dr.M.Maharajan	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2019-2020	ISSN :2348-3105	<a href="http://irjset.com/Vol1/issue1/1.htm">http://irjset.com/Vol1/issue1/1.htm</a>	<a href="http://irjset.com/2019/November/paper8.pdf">http://irjset.com/2019/November/paper8.pdf</a>	UGC
18	DESIGN & IMPLEMENTATION OF SINGLE ELECTRON TRANSISTOR (SET)	G. Ravikumar	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2019-2020	ISSN :2348-3105	<a href="http://irjset.com/Vol1/issue1/1.htm">http://irjset.com/Vol1/issue1/1.htm</a>	<a href="http://irjset.com/2019/November/paper8.pdf">http://irjset.com/2019/November/paper8.pdf</a>	UGC
19	DESIGN & IMPLEMENTATION OF SINGLE ELECTRON TRANSISTOR (SET)	M. A. Mubeen	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2019-2020	ISSN :2348-3105	<a href="http://irjset.com/Vol1/issue1/1.htm">http://irjset.com/Vol1/issue1/1.htm</a>	<a href="http://irjset.com/2019/November/paper8.pdf">http://irjset.com/2019/November/paper8.pdf</a>	UGC
20	DESIGN & IMPLEMENTATION OF SINGLE ELECTRON TRANSISTOR (SET)	M. A. Mudget	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2019-2020	ISSN :2348-3105	<a href="http://irjset.com/Vol1/issue1/1.htm">http://irjset.com/Vol1/issue1/1.htm</a>	<a href="http://irjset.com/2019/November/paper8.pdf">http://irjset.com/2019/November/paper8.pdf</a>	UGC



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21	Design of 8-4 and 9-4 Compressors For high Speed Multiplication	AMAIRULLAH KHAN LODHI, SAFIYA KALUNAIN, MOHAMMAD ILIYAS	ECE	JASC	2019-2020	ISSN NO: 1076-5131, VOLUME-6- ISSUE-6- JUNE-2019/	<a href="http://www.jasc.com/">http://www.jasc.com/</a>	<a href="https://app.box.com/s/836tyqh3tzlg7vdvno3y10ujj45va">https://app.box.com/s/836tyqh3tzlg7vdvno3y10ujj45va</a> mmx	UGC Care
22	Energy Efficient Wireless Sensor Networks: A Survey on Energy-Based Routing Techniques	Syed Abdul Sattar Amairullah Khan Lodhi, M.S.S. Rukmini	ECE	ICEECCOT	2019-2020	ISSN NO: 1056-5141, VOLUME-12- ISSUE-7	<a href="https://scholar.google.co.in/gle.co.in/">https://scholar.google.co.in/gle.co.in/</a>	<a href="https://scholar.google.co.in/scholar?hl=en&amp;as_sdt=0.5&amp;cluster=13458441633731284255">https://scholar.google.co.in/scholar?hl=en&amp;as_sdt=0.5&amp;cluster=13458441633731284255</a>	IEEE
23	Energy efficient Routing Protocol for Life Enhancement in Wireless Sensor Networks	Amairullah Khan Lodhi, M. S. S. Rukmini, Syed Abdulsattar	ECE	Recent Patents on Computer Science	2019-2020	ISSN: 1874- 4796 (Online) ISSN: 2213- 2759 (Print)	<a href="https://www.eureka-select.com/">https://www.eureka-select.com/</a>	<a href="https://www.eurkaselect.com/172801/article">https://www.eurkaselect.com/172801/article</a>	Scopus
24	Energy-Efficient Routing Protocol for Node Lifetime Enhancement in Wireless Sensor Networks	Amairullah Khan Lodhi, M. S. S. Rukmini, Syed Abdulsattar	ECE	IJATCSE	2019-2020	ISSN (Online) : 2278 - 3091	<a href="https://www.academia.edu/40110429/">https://www.academia.edu/40110429/</a>	<a href="https://www.academia.edu/40110429/Energy_Efficient_Routing_Protocol_for_Node_Lifetime_Enhancement_in_Wireless_Sensor_Networks">https://www.academia.edu/40110429/Energy_Efficient_Routing_Protocol_for_Node_Lifetime_Enhancement_in_Wireless_Sensor_Networks</a> rks	Scopus



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25	Energy efficient Routing Protocol for Life Enhancement in Wireless Sensor Networks	Amairullah Khan Lodhi, M. S. S. Rukmini, Syed Abdulsattar	ECE	Recent Patents on Computer Science	2019-2020	ISSN: 1874-4796 (Online) ISSN: 2213-2759 (Print)	<a href="https://www.academia.edu/40110429/Energy_Efficient_Routing_Protocol_for_Networks_in_Wireless_Sensor_Networks">https://www.academia.edu/40110429/Energy_Efficient_Routing_Protocol_for_Networks_in_Wireless_Sensor_Networks</a>	Scopus	
26	DESIGN & IMPLEMENTATION OF SINGLE ELECTRON TRANSISTOR (SET)	Mohammed Riyaz	ECE	International Journal on Recent Researches In Science, Engineering & Technology (IJRRSET)	2019-2020	ISSN :2348-3105	<a href="http://ijrrset.com/Volune7/issue11.htm">http://ijrrset.com/Volune7/issue11.htm</a>	<a href="http://ijrrset.com/2019/November/paper8.pdf">http://ijrrset.com/2019/November/paper8.pdf</a>	UGC
27	DESIGN & IMPLEMENTATION OF MEMORY ARCHITECTURES IN QUANTUM DOT CELLULAR AUTOMATA TECHNOLOGY	Amairullah Khan Lodhi	ECE	Indexing- International Journal on Recent Researches in Science, Engineering and Technology (IJRRSET)	2019-2020	ISSN :2348-3105	<a href="http://ijrrset.com/Volune8/issue3.html">http://ijrrset.com/Volune8/issue3.html</a>	<a href="http://ijrrset.com/2020/March/paper5.pdf">http://ijrrset.com/2020/March/paper5.pdf</a>	UGC
<b>2018-19</b>									
1	Energy-Efficient Routing Protocol for Node Lifetime Enhancement in Wireless Sensor Networks	Amairullah Khan Lodhi, M. S. S. Rukmini, Syed Abdulsattar	ECE	IJATCSE	2018-2019	ISSN: 1874-4796 (Online) ISSN: 2213-2759 (Print)	<a href="https://www.eureka-select.com/">https://www.eureka-select.com/</a>	<a href="https://www.eurkaselect.com/172801/article">https://www.eurkaselect.com/172801/article</a>	Scopus

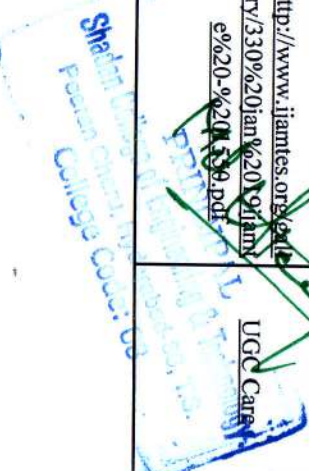


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2	Energy-Efficient Routing Protocol Based on Mobile Sink Node in Wireless Sensor Networks"	Amairullah Khan Lodhi, M. S. S. Rukmini, Syed Abdulsattar	ECE	IITTEE	2018-2019	ISSN (Online) : 2278 - 3091	<a href="https://www.academia.edu/40110429/Energy_Efficient_Routing_Protocol_for_Node_Lifetime_Enhancement_in_Wireless_Sensor_Networks">https://www.academia.edu/40110429/Energy_Efficient_Routing_Protocol_for_Node_Lifetime_Enhancement_in_Wireless_Sensor_Networks</a>	Scopus
3	Cluster Head Selection by optimized ability to restrict packet drop in Wireless Sensor Networks	Amairullah Khan Lodhi, Syed Abdulsattar	ECE	AISC Series of Springer	2018-2019	ISSN:2278-3075(Online)	<a href="https://www.semanticscholar.org/ticscholar.org/">https://www.semanticscholar.org/ticscholar.org/</a>	Scopus
4	JOINT CHANNEL AND POWER ALLOCATION SCHEME FOR OFDM BASED COGNITIVE RADIO SYSTEMS	M.A.Sameer, Mohammed Umair Quadri, Md.Nizamuddin Salman	ECE	Indian J.Sci.Res.	2018-2019	ISSN: 2194-5357	<a href="https://link.springer.com/">https://link.springer.com/</a>	Springer
5	Design of Low-power High Gain Operational Amplifier	Anis Fatema, M Asha rani	ECE	International journal of management, engineering and Technology.	2018-2019	ISSN: 0976-2876 (Print) ISSN: 2250-0138(Online)	<a href="https://www.ijsr.in/issue.php?id=ZIZPQ2pXYWxqcmVCsk4zcfJMRytrUT09">https://www.ijsr.in/issue.php?id=ZIZPQ2pXYWxqcmVCsk4zcfJMRytrUT09</a>	UGC Care
6	Design of Low-power fast 8 bit modified booth multiplier using AMS Simulator in cadence.	P Jubair Ahmed, Anis Fatema	ECE	International journal of management, engineering and Technology	2018-2019	ISSN NO: 2249-7455	<a href="http://www.ijamtes.org/">http://www.ijamtes.org/</a>	UGC Care



7	Efficient Energy Routing Protocol Based on Energy & Buffer Residual Status (EBRS) for Wireless Sensor Networks	Amairullah Khan Lodhi, M. S. S. Rukmini, Syed Abdulsattar	ECE	International Journal of Engineering and Technology	2018-2019	Vol. 9, Issue no. 155 pp. 33-37, in December 2019	<a href="https://doi.org/10.35940/ijeat.A1008.1291552019">https://doi.org/10.35940/ijeat.A1008.1291552019</a>	<a href="https://www.ijeat.org/wp-content/uploads/papers/v9i155/A10081291552019.pdf">https://www.ijeat.org/wp-content/uploads/papers/v9i155/A10081291552019.pdf</a>	Scopus
8	Energy-Efficient Routing Protocol Based on Mobile Sink Node in Wireless Sensor Networks”	Amairullah Khan Lodhi, M. S. S. Rukmini, Syed Abdulsattar	ECE	IJITEE	2018-2019	ISSN:2278-3075(Online)	<a href="https://www.semanticscholar.org/">https://www.semanticscholar.org/</a>	<a href="https://www.semanticscholar.org/paper/Efficient-Routing-Protocol-Based-on-Mobile-Sink-Node-in-Wireless-Sensor-Networks/Lodhi-Rukmini/14c4173d132b250ca5961ae38348e0927ca438a2">https://www.semanticscholar.org/paper/Efficient-Routing-Protocol-Based-on-Mobile-Sink-Node-in-Wireless-Sensor-Networks/Lodhi-Rukmini/14c4173d132b250ca5961ae38348e0927ca438a2</a>	Scopus
9	Cluster Head Selection by optimized ability to restrict packet drop in Wireless Sensor Networks	Amairullah Khan Lodhi, Syed Abdulsattar	ECE	AISC Series of Springer	2018-2019	ISSN: 2194-5357	<a href="https://link.springer.com/https://link.springer.com/chapter/10.1007%2F978-981-13-05114-6_45">https://link.springer.com/https://link.springer.com/chapter/10.1007%2F978-981-13-05114-6_45</a>	<a href="https://link.springer.com/chapter/10.1007%2F978-981-13-05114-6_45">https://link.springer.com/chapter/10.1007%2F978-981-13-05114-6_45</a>	Springer
10	JOINT CHANNEL AND POWER ALLOCATION SCHEME FOR OFDM BASED COGNITIVE RADIO SYSTEMS	M.A.Sameer, MohammedUmar Quadri, Md.Nizamuddin Salman	ECE	Indian J.Sci.Res.	2018-2019	ISSN: 0976-2876 (Print) ISSN: 2250-0138(Online)	<a href="https://www.ijscr.in/issue.php?id=ZIZPQ2pXYWxqcmVCsk4zeFJMRYrtUT09">https://www.ijscr.in/issue.php?id=ZIZPQ2pXYWxqcmVCsk4zeFJMRYrtUT09</a>	<a href="https://www.ijscr.in/article-description.php?id=VG42bWsvNGs0RTVEtEtmWisydldvdz09">https://www.ijscr.in/article-description.php?id=VG42bWsvNGs0RTVEtEtmWisydldvdz09</a>	UGC Care



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11	Design of Low-power High Gain Operational Amplifier	Anis Fatema, M Asha rani	ECE	International journal of management, engineering and Technology.	2018-2019	ISSN NO: 2249-7455	<a href="http://www.ijamtes.org/">http://www.ijamtes.org/</a>	<a href="http://www.ijamtes.org/gallery/330%20Jan%2019ijamte%20-%201550.pdf">http://www.ijamtes.org/gallery/330%20Jan%2019ijamte%20-%201550.pdf</a>	UGC Care
12	Efficient Energy Routing Protocol Based on Energy & Buffer Residual Status (EBRS) for Wireless Sensor Networks	Amairullah Khan Lodhi, M. S. S. Rukmini, Syed Abdulstar	ECE	International Journal of Engineering and Technology	2018-2019	Vol. 9, Issue no. ISS pp. 33-37, in December 2019	<a href="https://doi.org/10.35940/ijeat.A1008.19291ss2019">https://doi.org/10.35940/ijeat.A1008.19291ss2019</a>	<a href="https://www.ijeat.org/wp-content/uploads/papers/v9i1ss/A10081291ISS2019.pdf">https://www.ijeat.org/wp-content/uploads/papers/v9i1ss/A10081291ISS2019.pdf</a>	Scopus
13	Design of an IoT Smart Home System	Shaik saidulu & others	ECE	JETTIR	2018-2019	Volumes, Issue 12, pp: 595-606, ISSN 2349-5162	<a href="https://mail.google.com/mail/u/0/?ogbl#search/ijvas/FMfcgzGKXSRLFKBWQVKEVzKdICTpbV?projector=1&amp;messagePartId=0.1">https://mail.google.com/mail/u/0/?ogbl#search/ijvas/FMfcgzGKXSRLFKBWQVKEVzKdICTpbV?projector=1&amp;messagePartId=0.1</a>	<a href="https://mail.google.com/mail/u/0/?ogbl#search/ijvas/FMfcgzGKXSRLFKBWQVKEVzKdICTpbV?projector=1&amp;messagePartId=0.1">https://mail.google.com/mail/u/0/?ogbl#search/ijvas/FMfcgzGKXSRLFKBWQVKEVzKdICTpbV?projector=1&amp;messagePartId=0.1</a>	Scopus
14	IOT BASED SOLAR TRACKING SYSTEM FOR EFFICIENT POWER GENERATION	RAVINDER KORANI AND OTHERS	ECE	International Journal of Research and Analytical Reviews (IJRAR)	2018-2019	(E-ISSN 2348-1269, P-ISSN 2349-5138) Volume 5, Issue 04	<a href="https://www.ijrar.org/">https://www.ijrar.org/</a>	<a href="http://www.ijrar.org/papers/IJRAR1944279.pdf">http://www.ijrar.org/papers/IJRAR1944279.pdf</a>	Scopus



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15	MEMS, RFIDS AND SENSORS: THE KEY ENABLERS OF INTERNET OF THINGS	RAVINDER KORANI AND OTHER	ECE	IJCESR	2018-2019	ISSN (PRINT): 2393-8374, (ONLINE): 2394-0697, VOLUME-5, ISSUE-4, 2018	<a href="https://www.ijcesr.com/">https://www.ijcesr.com/</a>	<a href="http://troindia.in/journal/ijcesr/vol5iss4/274-283.pdf">http://troindia.in/journal/ijcesr/vol5iss4/274-283.pdf</a>	Scopus
16	Anomaly based Intrusion Detection by Heuristics to Predict Intrusion Scope of IOT Network Transactions	RAVINDER KORANI AND OTHER	ECE	International Journal of Engineering & Technology	2018-2019	IJET, 7 (2.7) (2018) 797-802 DOI:10.14419/ijet.v7i2.7.10982	<a href="https://www.sciencepubco.com/index.php/index/index">https://www.sciencepubco.com/index.php/index/index</a>	<a href="https://www.sciencepubco.com/index.php/ijet/article/view/10982">https://www.sciencepubco.com/index.php/ijet/article/view/10982</a>	Scopus
17	MLID: Machine Learning Based Intrusion Detection from Network Transactions of MEMS Integrated Diversified IOT	RAVINDER KORANI AND OTHER	ECE	Proceedings of the Third International Conference on Computational Intelligence and Informatics	2018-2019	Pages 427-442.	<a href="https://www.springer.com/">https://www.springer.com/</a>	<a href="https://www.researchgate.net/publication/339994856">https://www.researchgate.net/publication/339994856</a> <a href="https://www.springer.com/">https://www.springer.com/</a> MLID Machine Learning-Based Intrusion Detection from Network Transactions of MEMS Integrated Diversified IoT	Springer



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18	Design of 8-4 and 9-4 Compressors For high Speed Multiplication	MOHAMMAD ILIYAS AMAIRULLAH KHAN LODHI, SAFIYA KAUNAIN	ECE	JASC	2018-2019	ISSN NO: 1076-5131, VOLUME-6- ISSUE-6- JUNE-2019/	<a href="http://www.jasc.com/">http://www.jasc.com/</a>	<a href="https://app.box.com/s/836tyqh3tzlg7v6vno3yrt0ujj45va_mnx">https://app.box.com/s/836tyqh3tzlg7v6vno3yrt0ujj45va_mnx</a>	UGC Care
19	Energy-Efficient Routing Protocol for Node Lifetime Enhancement in Wireless Sensor Networks	M.S.S. Rukmini Amairullah Khan Lodhi	ECE	IJATCSE	2018-2019	ISSN 2278-3091, Volume 8, No.1.3, 2019	<a href="http://www.warse.org/IJATCSE/">http://www.warse.org/IJATCSE/</a>	<a href="http://www.warse.org/IJATCSE/static/pdf/file/ijatcse05813s2019.pdf">http://www.warse.org/IJATCSE/static/pdf/file/ijatcse05813s2019.pdf</a>	Scopus
20	Energy-Efficient Routing Protocol Based on Mobile Sink Node in Wireless Sensor Networks	Syed Abdulsattar Amairullah Khan Lodhi, M. S. S. Rukmini	ECE	IJITEE	2018-2019	ISSN: 2278-3075, Volume-8 Issue-7, May, 2019	<a href="https://www.ijitee.org/">https://www.ijitee.org/</a>	<a href="https://www.ijitee.org/wp-content/uploads/papers/v8i7/G5316058719.pdf">https://www.ijitee.org/wp-content/uploads/papers/v8i7/G5316058719.pdf</a>	Scopus
21	Cluster Head Selection by Optimized Ability to Restrict Packet Drop in Wireless Sensor Networks	Amairullah Khan Lodhi, Syed Abdul Sattar	ECE	SCDA	2018-2019	Soft Computing in Data Analytics (pp.453-461)	<a href="https://www.researchgate.net/">https://www.researchgate.net/</a>	<a href="https://www.researchgate.net/publication/327162122-Cluster-Head-Selection-by-Optimized-Ability-to-Restrict-Packet-Drop-in-Wireless-Sensor-Networks">https://www.researchgate.net/publication/327162122-Cluster-Head-Selection-by-Optimized-Ability-to-Restrict-Packet-Drop-in-Wireless-Sensor-Networks</a>	Springer



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*M. S. S. Rukmini*

22	MOVING OBJECT TRACKING SYSTEM FOR WIRELESS SENSOR NETWORKS	Dr.S.Tamil	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2018-2019	ISSN: 2348-3105	<a href="http://ijrset.com/Volunue6_Issue10.html">http://ijrset.com/Volunue6_Issue10.html</a>	<a href="http://ijrset.com/2018/volu6issue10/paper8.pdf">http://ijrset.com/2018/volu6issue10/paper8.pdf</a>	UGC
23	MOVING OBJECT TRACKING SYSTEM FOR WIRELESS SENSOR NETWORKS	H. A. Abdus Samad	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2018-2019	ISSN: 2348-3105	<a href="http://ijrset.com/Volunue6_Issue10.html">http://ijrset.com/Volunue6_Issue10.html</a>	<a href="http://ijrset.com/2018/volu6issue10/paper8.pdf">http://ijrset.com/2018/volu6issue10/paper8.pdf</a>	UGC
24	MOVING OBJECT TRACKING SYSTEM FOR WIRELESS SENSOR NETWORKS	M. A. Sameer	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2018-2019	ISSN: 2348-3105	<a href="http://ijrset.com/Volunue6_Issue10.html">http://ijrset.com/Volunue6_Issue10.html</a>	<a href="http://ijrset.com/2018/volu6issue10/paper8.pdf">http://ijrset.com/2018/volu6issue10/paper8.pdf</a>	UGC
25	MOVING OBJECT TRACKING SYSTEM FOR WIRELESS SENSOR NETWORKS	Mukram Ali	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2018-2019	ISSN: 2348-3105	<a href="http://ijrset.com/Volunue6_Issue10.html">http://ijrset.com/Volunue6_Issue10.html</a>	<a href="http://ijrset.com/2018/volu6issue10/paper8.pdf">http://ijrset.com/2018/volu6issue10/paper8.pdf</a>	UGC



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*M. A. Sameer*



26	MOVING OBJECT TRACKING SYSTEM FOR WIRELESS SENSOR NETWORKS	A. Haseeb	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2018-2019	ISSN: 2348-3105	<a href="http://ijrrset.com/Volune6_Issue10.html">http://ijrrset.com/Volune6_Issue10.html</a>	<a href="http://ijrrset.com/2018/volume6issue10/paper8.pdf">http://ijrrset.com/2018/volume6issue10/paper8.pdf</a>	UGC
27	Design and Implementation of Compact Reconfigurable Antenna for UWB and WLAN Application	Dr.M.Maharajan	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2018-2019	ISSN: 2348-3105	<a href="http://ijrrset.com/volume6issue7.html">http://ijrrset.com/volume6issue7.html</a>	<a href="http://www.ijrrset.com/2018/volume6issue7/paper3.pdf">http://www.ijrrset.com/2018/volume6issue7/paper3.pdf</a>	UGC
28	DESIGN & IMPLEMENTATION OF BASICS ARTIFICIAL NEURAL NETWORK	Dr.M.Maharajan	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2018-2019	ISSN: 2348-3105	<a href="http://ijrrset.com/Volune7issue2.html">http://ijrrset.com/Volune7issue2.html</a>	<a href="http://www.ijrrset.com/2019/feb/paper13.pdf">http://www.ijrrset.com/2019/feb/paper13.pdf</a>	UGC
29	DESIGN & IMPLEMENTATION OF BASICS ARTIFICIAL NEURAL NETWORK	M.A.Sameer	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2018-2019	ISSN: 2348-3105	<a href="http://ijrrset.com/Volune7issue2.html">http://ijrrset.com/Volune7issue2.html</a>	<a href="http://www.ijrrset.com/2019/feb/paper13.pdf">http://www.ijrrset.com/2019/feb/paper13.pdf</a>	UGC



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30	DESIGN & IMPLEMENTATION OF BASICS ARTIFICIAL NEURAL NETWORK	M. Riyaz	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2018-2019	ISSN: 2348-3105	<a href="http://ijrset.com/Volune7/issue2.html">http://ijrset.com/Volune7/issue2.html</a>	<a href="http://www.i jrset.com/2019/Feb/paper13.pdf">http://www.i jrset.com/2019/Feb/paper13.pdf</a>	UGC
31	DESIGN & IMPLEMENTATION OF BASICS ARTIFICIAL NEURAL NETWORK	M. Ilyas	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2018-2019	ISSN: 2348-3105	<a href="http://ijrset.com/Volune7/issue2.html">http://ijrset.com/Volune7/issue2.html</a>	<a href="http://www.i jrset.com/2019/Feb/paper13.pdf">http://www.i jrset.com/2019/Feb/paper13.pdf</a>	UGC
32	DESIGN & IMPLEMENTATION OF BASICS ARTIFICIAL NEURAL NETWORK	A. Haseeb	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2018-2019	ISSN: 2348-3105	<a href="http://ijrset.com/Volune7/issue2.html">http://ijrset.com/Volune7/issue2.html</a>	<a href="http://www.i jrset.com/2019/Feb/paper13.pdf">http://www.i jrset.com/2019/Feb/paper13.pdf</a>	UGC
<b>2017-18</b>									
1	Intelligent Home Automation System Using Internet of Things(IOT)Technology on rasberry pi17	G RAVI KUMAR	ECE	IJSETR	2017	ISSN No. 2319-8885	<a href="https://ijetae.com/">https://ijetae.com/</a>	<a href="https://ijetae.com/files/Vol10/issue10/IJETAE_1017_79.pdf">https://ijetae.com/files/Vol10/issue10/IJETAE_1017_79.pdf</a>	Scopus
2	Low Power Test Data Compression Techniques for Digital VLSI Circuits	Mohd Ilyas	ECE	IJMETMR	2017	ISSN 2320 - 5547	<a href="https://ijetae.com/">https://ijetae.com/</a>	<a href="https://ijetae.com/files/Vol10/issue10/IJETAE_1117_67.pdf">https://ijetae.com/files/Vol10/issue10/IJETAE_1117_67.pdf</a>	Scopus



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3	High Speed Multi Output CLA Adders Using 8 Bit MCC Adder In Domino Logic	Mohd Ilyas	ECE	IJITR	2017	ISSN 2320 - 5547	<a href="https://journals.pen2print.org/2print.org/">https://journals.pen2print.org/2print.org/</a>	<a href="https://journals.pen2print.org/index.php/ij/article/view/10954/10475">https://journals.pen2print.org/index.php/ij/article/view/10954/10475</a>	Scopus
4	"The Methods of Improving the Speed of CLA Adders in Domino Logic" published in Volume 5, Issue no: 1, Page No: 5440-5442 in Jan 2017.	Mohd Ilyas	ECE	IJITR	2017	ISSN 2320 - 5547	<a href="http://iriset.com/volume5issue8.html">http://iriset.com/volume5issue8.html</a>	<a href="http://iriset.com/2017/volume5issue8/paper12.pdf">http://iriset.com/2017/volume5issue8/paper12.pdf</a>	UGC
5	"Low Power Selective pattern and Compression Techniques in Digital VLSI Circuits" published in IJITR Volume 5, Issue No: 1, Page No: 5452-5455 in Jan 2017.	Mohd Ilyas	ECE	IJITR	2017	ISSN 2320 - 5547	<a href="http://iriset.com/Volume6_issue2.html">http://iriset.com/Volume6_issue2.html</a>	<a href="http://iriset.com/2018/volume6issue2/paper10.pdf">http://iriset.com/2018/volume6issue2/paper10.pdf</a>	UGC
6	"Design of 4 Bit MCC Adders to improve processor speed in VLSI" published in IJITR Volume 5, Issue No:01, Page No: 5443-5446 in Jan 2017.	Mohd Ilyas	ECE	IJITR	2017	ISSN 2320 - 5547	<a href="http://iriset.com/Volume6_issue2.html">http://iriset.com/Volume6_issue2.html</a>	<a href="http://iriset.com/2018/volume6issue2/paper18.pdf">http://iriset.com/2018/volume6issue2/paper18.pdf</a>	UGC



7	"Low Power Test Data Compression and Power minimization methods for Digital VLSI circuits" published in JIJTR Volume 5, Issue no: 1, Page No: 5447-5451 in Jan 2017.	Mohd Iliya	ECE	IJITR	2017	ISSN 2320 - 5547	<a href="https://www.ijitr.com/index.php/ojs/article/view/1939">https://www.ijitr.com/index.php/ojs/article/view/1939</a>	Scopus
8	" A Motion Enable Robotic ARM Controlled Through A Smart Phones" published in IJITR Volume 5, Issue No:5, Page No: 7240-7242 in Sep 2017.	Mohd Iliyas	ECE	IJITR	2017	ISSN 2320 - 5547	<a href="http://www.ijitr.com/index.php/ojs/article/view/1940/pdf">http://www.ijitr.com/index.php/ojs/article/view/1940/pdf</a>	Scopus
9	"A Nimble – Witted Defensive Cap for Excavators" published in IJITR Volume 5, Issue No:5, Page No: 7243-7246 in Sep 2017.	Mohd Iliya	ECE	IJITR	2017	ISSN 2320 - 5547	<a href="https://ijetae.com/meTissue10/IJETAE_1017_78.pdf">https://ijetae.com/meTissue10/IJETAE_1017_78.pdf</a>	Scopus
10	Intelligent Home Automation System Using Internet of Things(IOT)Technology on raspberry pi17	G RAVI KUMAR	ECE	IJSETR	2017-2018	ISSN 2319- 8885 Vol.06, Issue.0 3 January-2017, Pages:0593-	<a href="http://ijsetr.com/">http://ijsetr.com/</a> <a href="http://ijsetr.com/uploads/541326IJSETR13592-103.pdf">http://ijsetr.com/uploads/541326IJSETR13592-103.pdf</a>	Scopus



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11	Low Power Test Data Compression Techniques for Digital VLSI Circuits	Mohd Ilyas	ECE	IJMETMR	2017-2018	ISSN 2320 - 5547	<a href="http://www.ijitr.com">www.ijitr.com</a>	<a href="http://www.ijitr.com/index.php/ojs/article/download/1518/pdf">www.ijitr.com/index.php/ojs/article/download/1518/pdf</a>	Scopus
12	High Speed Multi Output CLA Adders Using 8 Bit MCC Adder In Domino Logic	Mohd Ilyas	ECE	IJITR	2017-2018	ISSN 2320 - 5547	<a href="http://www.ijitr.com">http://www.ijitr.com</a>	<a href="http://www.ijitr.com/index.php/ojs/article/view/1515">http://www.ijitr.com/index.php/ojs/article/view/1515</a>	Scopus
13	"The Methods of Improving the Speed of CLA Adders in Domino Logic" published in Volume 5, Issue no: 1, Page No: 5440-5442 in Jan 2017.	Mohd Ilyas	ECE	IJITR	2017-2018	ISSN 2320 - 5547	<a href="http://www.ijitr.com">http://www.ijitr.com</a>	<a href="http://www.ijitr.com/index.php/ojs/article/view/1516">http://www.ijitr.com/index.php/ojs/article/view/1516</a>	Scopus
14	"Low Power Selective pattern and Compression Techniques in Digital VLSI Circuits".	Mohd Ilyas	ECE	IJITR	2017-2018	ISSN 2320 - 5547	<a href="http://www.ijitr.com">www.ijitr.com</a>	<a href="http://www.ijitr.com/index.php/ojs/article/download/1519/pdf">www.ijitr.com/index.php/ojs/article/download/1519/pdf</a>	Scopus
15	"Design of 4 Bit MCC Adders to improve processor speed in VLSI"	Mohd Ilyas	ECE	IJITR	2017-2018	ISSN 2320 - 5547	<a href="http://www.ijitr.com">www.ijitr.com</a>	<a href="http://www.ijitr.com/index.php/ojs/article/download/1517/pdf">www.ijitr.com/index.php/ojs/article/download/1517/pdf</a>	Scopus



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16	"Low Power Test Data Compression and Power minimization methods for Digital VLSI circuits"	Mohd Iliya	ECE	IJITR	2017-2018	ISSN 2320 - 5547	<a href="http://www.ijitr.co/ml/">http://www.ijitr.co/ml/</a>	<a href="http://www.ijitr.com/index.php/ojs/article/view/1518">http://www.ijitr.com/index.php/ojs/article/view/1518</a>	Scopus
17	"A Motion Enable Robotic ARM Controlled Through A Smart Phones"	Mohd Iliyass	ECE	IJITR	2017-2018	ISSN 2320 - 5547	<a href="https://www.ijitr.co/ml/">https://www.ijitr.co/ml/</a>	<a href="https://www.ijitr.com/index.php/ojs/article/view/1939">https://www.ijitr.com/index.php/ojs/article/view/1939</a>	Scopus
18	"A Nimble – Witted Defensive Cap for Excavators"	Mohd Iliya	ECE	IJITR	2017-2018	ISSN 2320 - 5547	<a href="http://www.ijitr.co/ml/">http://www.ijitr.co/ml/</a>	<a href="http://www.ijitr.com/index.php/ojs/article/view/1940/pdf">http://www.ijitr.com/index.php/ojs/article/view/1940/pdf</a>	Scopus
19	Design Issues of Multi Channels in SPI Environment	Shaik saidulu & others	ECE	International Journal of Emerging Technology and Advanced Engineering	2017-2018	Volume 7, Issue 10, pg:494-497, ISSN 2250-2459, ISO 9001:2008	<a href="https://ijetae.com/">https://ijetae.com/</a>	<a href="https://ijetae.com/files/Volume7/Issue10/IJETAE_1017_78.pdf">https://ijetae.com/files/Volume7/Issue10/IJETAE_1017_78.pdf</a>	Scopus
20	Design and Implantation of IoT Based Coalmine Rescue and Safety System with Central Monitoring	Shaik saidulu & others	ECE	International Journal of Emerging Technology and Advanced Engineering	2017-2018	Volume 7, Issue 10, Pg:498-502, ISSN 2250-2459, ISO 9001:2008	<a href="https://ijetae.com/">https://ijetae.com/</a>	<a href="https://ijetae.com/files/Volume7/Issue10/IJETAE_1017_79.pdf">https://ijetae.com/files/Volume7/Issue10/IJETAE_1017_79.pdf</a>	Scopus



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21	Design and Implantation of Multi Slave in SPI Environment	Shaik saidulu & others	ECE	International Journal of Emerging Technology and Advanced Engineering	2017-2018	Volume 7, Issue 11, Pg:413-419, ISSN 2250-2459, ISO 9001:2008	<a href="https://ijetae.com/">https://ijetae.com/</a>	<a href="https://ijetae.com/files/Volume7/Issue11/IJETAE_1117_67.pdf">https://ijetae.com/files/Volume7/Issue11/IJETAE_1117_67.pdf</a>	Scopus
22	Differentiated Virtual Passwords, Secret Little Functions and Codebooks for Protecting Users from Password Theft	Shaik saidulu & others	ECE	International Journal of Research	2017-2018	Volume 04, Issue-17, Pg:1694-1699, e-ISSN: 2348-6848 p-ISSN: 2348-795X	<a href="https://journals.pen2print.org/2print.org/">https://journals.pen2print.org/</a>	<a href="https://journals.pen2print.org/index.php/ijr/article/view/10954/10475">https://journals.pen2print.org/index.php/ijr/article/view/10954/10475</a>	Scopus
23	Gaussian Noise Removal in an Image using Fast Guided Filter and its Method Noise Thresholding	Dr.S.China Venkateswarulu	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2017-2018	ISSN :2348-3105	<a href="http://irrsct.com/volume5issue8.html">http://irrsct.com/volume5issue8.html</a>	<a href="http://irrsct.com/2017/volume5issue8/paper12.pdf">http://irrsct.com/2017/volume5issue8/paper12.pdf</a>	UGC
24	A BRIEF REVIEW ON SECURITY ATTACKS IN WIRELESS SENSOR NETWORKS	Dr.B.Rajian	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2017-2018	ISSN :2348-3105	<a href="http://irrsct.com/volume6_issue2.html">http://irrsct.com/volume6_issue2.html</a>	<a href="http://irrsct.com/2018/volume6issue2/paper10.pdf">http://irrsct.com/2018/volume6issue2/paper10.pdf</a>	UGC



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25	DESIGN & IMPLEMENTATION OF BASICS ARTIFICIAL NEURAL NETWORK	Dr.S.China Venkateswarulu	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2017-2018	ISSN :2348-3105	<a href="http://ijrrset.com/Volunue6_issue2.htm">http://ijrrset.com/Volunue6_issue2.htm</a> 1	<a href="http://ijrrset.com/2018/volu6issue2/paper18.pdf">http://ijrrset.com/2018/volu6issue2/paper18.pdf</a>	UGC
26	DESIGN & IMPLEMENTATION OF BASICS ARTIFICIAL NEURAL NETWORK	M.A.Sameer	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2017-2018	ISSN :2348-3105	<a href="http://ijrrset.com/Volunue6_issue2.htm">http://ijrrset.com/Volunue6_issue2.htm</a> 1	<a href="http://ijrrset.com/2018/volu6issue2/paper18.pdf">http://ijrrset.com/2018/volu6issue2/paper18.pdf</a>	UGC
27	DESIGN & IMPLEMENTATION OF BASICS ARTIFICIAL NEURAL NETWORK	M. Ilyas	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2017-2018	ISSN :2348-3105	<a href="http://ijrrset.com/Volunue6_issue2.htm">http://ijrrset.com/Volunue6_issue2.htm</a> 1	<a href="http://ijrrset.com/2018/volu6issue2/paper18.pdf">http://ijrrset.com/2018/volu6issue2/paper18.pdf</a>	UGC
28	DESIGN & IMPLEMENTATION OF BASICS ARTIFICIAL NEURAL NETWORK	A. Haseeb	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2017-2018	ISSN :2348-3105	<a href="http://ijrrset.com/Volunue6_issue2.htm">http://ijrrset.com/Volunue6_issue2.htm</a> 1	<a href="http://ijrrset.com/2018/volu6issue2/paper18.pdf">http://ijrrset.com/2018/volu6issue2/paper18.pdf</a>	UGC



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29	DESIGN & IMPLEMENTATION OF BASICS ARTIFICIAL NEURAL NETWORK	M. Riyaz	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2017-2018	ISSN :2348-3105	<a href="http://jrrset.com/Volunue6_issue2.htm">http://jrrset.com/Volunue6_issue2.htm</a> 1	<a href="http://jrrset.com/2018/volunue6issue2/paper18.pdf">http://jrrset.com/2018/volunue6issue2/paper18.pdf</a>	UGC
30	DESIGN & IMPLEMENTATION OF CONVOLUTION NEURAL NETWORKS	Dr.B.Rajian	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2017-2018	ISSN :2348-3105	<a href="http://jrrset.com/Volunue6_issue2.htm">http://jrrset.com/Volunue6_issue2.htm</a> 1	<a href="http://jrrset.com/2018/volunue6issue2/paper20.pdf">http://jrrset.com/2018/volunue6issue2/paper20.pdf</a>	UGC
31	DESIGN & IMPLEMENTATION OF CONVOLUTION NEURAL NETWORKS	M A Sameer	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2017-2018	ISSN :2348-3105	<a href="http://jrrset.com/Volunue6_issue2.htm">http://jrrset.com/Volunue6_issue2.htm</a> 1	<a href="http://jrrset.com/2018/volunue6issue2/paper20.pdf">http://jrrset.com/2018/volunue6issue2/paper20.pdf</a>	UGC
32	DESIGN & IMPLEMENTATION OF CONVOLUTION NEURAL NETWORKS	M. Ilyas	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2017-2018	ISSN :2348-3105	<a href="http://jrrset.com/Volunue6_issue2.htm">http://jrrset.com/Volunue6_issue2.htm</a> 1	<a href="http://jrrset.com/2018/volunue6issue2/paper20.pdf">http://jrrset.com/2018/volunue6issue2/paper20.pdf</a>	UGC



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33	DESIGN & IMPLEMENTATION OF CONVOLUTION NEURAL NETWORKS	Azeem Hussain	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRES ET)	2017-2018	ISSN :2348-3105	<a href="http://ijrreset.com/Volunne6_issue2.htm">http://ijrreset.com/Volunne6_issue2.htm</a> 1	<a href="http://ijrreset.com/2018/volume6issue2/paper20.pdf">http://ijrreset.com/2018/volume6issue2/paper20.pdf</a>	UGC
34	DESIGN & IMPLEMENTATION OF CONVOLUTION NEURAL NETWORKS	Aaqib Ithraz	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRES ET)	2017-2018	ISSN :2348-3105	<a href="http://ijrreset.com/Volunne6_issue2.htm">http://ijrreset.com/Volunne6_issue2.htm</a> 1	<a href="http://ijrreset.com/2018/volume6issue2/paper20.pdf">http://ijrreset.com/2018/volume6issue2/paper20.pdf</a>	UGC
<b>2016-17</b>									
1	Embedded Ethernet Monitoring and Control Using Web Browser	Shaik saidulu & others	ECE	IJETAE	2016-2017	ISSN:2250-2459, volume-6, Issue 7, Pages:160-163, July 2016	<a href="https://ijetae.com/">https://ijetae.com/</a>	<a href="https://ijetae.com/files/Volunne6Issue7/IJETAE_0716_24.pdf">https://ijetae.com/files/Volunne6Issue7/IJETAE_0716_24.pdf</a>	Scopus
2	System for Monitoring and Fall detection of Patients Using Mobile 3-Axis Accelerometers Sensors	Shaik saidulu & others	ECE	IJARF	2016-2017	ISSN: 2394-3394, Volume-3, Issue-7, Pages:1-4, July-2016	<a href="http://ijarf.com/">http://ijarf.com/</a>	<a href="http://ijarf.com/wp-content/uploads/2016/07/IIJARF-1-4.pdf">http://ijarf.com/wp-content/uploads/2016/07/IIJARF-1-4.pdf</a>	Scopus



Accepted  
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3	ARM based Remote Monitoring and Control System for Environmental Parameters in Green house	Shaik saidulu & others	ECE	IJMETMR	2016-2017	ISSN: 2348-4845, volume 3, Issue 10, PP: 1276-1281, Oct-2016.	<a href="http://www.ijmetmr.com/">http://www.ijmetmr.com/</a>	<a href="http://www.ijmetmr.com/october2016/VDiviyabharathi-ShaikSaidulu-BKedarnath-SSreenaharReddy-183.pdf">http://www.ijmetmr.com/october2016/VDiviyabharathi-ShaikSaidulu-BKedarnath-SSreenaharReddy-183.pdf</a>	Scopus
4	Design of Low Power and High Speed Modified Carry Select Adder for 16 bit Vedic Multiplier	Shaik saidulu & others	ECE	IJEEEE	2016-2017	ISSN:2348-4748, volume3, Issue 7, Pages:7-10, July 2016	<a href="http://www.gniindia.a.org/">http://www.gniindia.a.org/</a>	<a href="http://www.gniindia.org/pdf/IJICEE-2015.pdf">http://www.gniindia.org/pdf/IJICEE-2015.pdf</a>	UGC Care
5	Smart Home System Using Android Application	Shaik saidulu & others	ECE	IJARF	2016-2017	ISSN: 2394-3394, Volume-3, Issue-8, Pages:105-106, Aug-2016	<a href="http://ijarf.com/">http://ijarf.com/</a>	<a href="http://ijarf.com/wp-content/uploads/2017/02/IJARF-105-108.pdf">http://ijarf.com/wp-content/uploads/2017/02/IJARF-105-108.pdf</a>	Scopus
6	Advanced Head light controlling system for Automobiles	G RAVI KUMAR	ECE	IRJET	2016-2017	e-issn: 1395-0056 P-issn:2395-0072	<a href="https://www.irjet.in">https://www.irjet.in</a>	<a href="https://www.irjet.net/archives/V3/I10/IRJET-V3I10221.pdf">https://www.irjet.net/archives/V3/I10/IRJET-V3I10221.pdf</a>	UGC Care



7	Development of Low Power Test Data Compression Techniques for Digital VLSI Circuits	Mohd Ilyas	ECE	IJARCCCE	2016-2017	ISSN (Online) 2278-1021 ISSN (Print) 2319 5940 ISSN 2320 - 5547 Volume 5, Issue No: 12, Page No: 423-425	DOI:10.17148/IJARCCCE.2016.51297	<a href="https://www.researchgate.net/publication/317649266_Development_of_Low_Power_Test_Data_Compression_Techniques_for_Digital_VLSI_Circuits">https://www.researchgate.net/publication/317649266_Development_of_Low_Power_Test_Data_Compression_Techniques_for_Digital_VLSI_Circuits</a>	Scopus
8	Design of 8-Bit MCC Circuit in Domino Logic	Mohd Ilyas	ECE	IJARCCCE	2016-2017	ISSN 2320 - 5547	DOI:10.17148/IJARCCCE.2016.51297	<a href="https://library.net/document/17p1v-design-circuit-dominio-mohammad-ilyas-sharma-murali-prasad.html">https://library.net/document/17p1v-design-circuit-dominio-mohammad-ilyas-sharma-murali-prasad.html</a>	Scopus
9	Brief Analysis of Low Power VLSI Testing Under Test Data Compression Architecture	Mohd Ilyas	ECE	AIROIRJ	2016-2017	ISSN 2320 - 5547	<a href="https://archive.airo.co.in/">https://archive.airo.co.in/</a>	<a href="https://archive.airo.co.in/page/admin/upload/international_volume/1346Mohammed%20Ilyas%20International_vol%208.pdf">https://archive.airo.co.in/page/admin/upload/international_volume/1346Mohammed%20Ilyas%20International_vol%208.pdf</a>	Scopus
10	GSM Wireless Technology Implementation in HAZE Monitoring	Shaik saidulu & others	ECE	IJBEE	2016-2017	ISSN:2348-4748,	<a href="http://ijeee.in/">http://ijeee.in/</a>	<a href="http://ijeee.in/wp-content/uploads/2016/07/IIJEE-7-10.pdf">http://ijeee.in/wp-content/uploads/2016/07/IIJEE-7-10.pdf</a>	Scopus



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11	Different Types of Data Compression Techniques in Digital VLSI Circuits	Mohd Ilyas	ECE	IJARCCCE	2016-2017	ISSN 2320 - 5547	<a href="http://www.jimnetm.com/">http://www.jimnetm.com/</a>	<a href="http://www.jimnetm.com/pdf/February2016/MohammadIlyas-FarhanAjum-AnilKumarSharma-RMurallPrasad-A-13.pdf">http://www.jimnetm.com/pdf/February2016/MohammadIlyas-FarhanAjum-AnilKumarSharma-RMurallPrasad-A-13.pdf</a>	Scopus
12	Andriod Based Health Care Monitoring System16	G RAVI KUMAR	ECE	IJMETMR	2016-2017	2348-4845	<a href="https://archive.airo.co.in/">https://archive.airo.co.in/</a>	<a href="https://archive.airo.co.in/paper/admin/upload/international_volume/1346Mohammed%20Ilyas%20International_1_vol%208.pdf">https://archive.airo.co.in/paper/admin/upload/international_volume/1346Mohammed%20Ilyas%20International_1_vol%208.pdf</a>	Scopus
13	Advanced Head light controlling system for Automobile16	G RAVI KUMAR	ECE	IRJET	2016-2017	e-issn: 1395-0056 P-issn:2395-0072	<a href="https://www.irjet.in">https://www.irjet.in</a>	<a href="https://www.irjet.net/archives/V3/I10/IRJET-V3I10221.pdf">https://www.irjet.net/archives/V3/I10/IRJET-V3I10221.pdf</a>	UGC Care
14	Portable Camera Based Assistance Label Reading For Blind person16	G RAVI KUMAR	ECE	IJVDCS	2016-2017	2322-0929 VOL.04 ISSUE:10	<a href="https://www.irjet.in">https://www.irjet.in</a>	<a href="https://www.irjet.net/archives/V3/I10/IRJET-V3I10221.pdf">https://www.irjet.net/archives/V3/I10/IRJET-V3I10221.pdf</a>	UGC Care



  
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15	"Development of Low Power Test Data Compression Techniques for Digital VLSI Circuits" published in IJARCCCE in Volume 5 (2016), Issue No: 12, Page No: 423-425 in Dec 2016.	Mohd Ilyas	ECE	IJARCCCE	2016-2017	ISSN (Online) 2278-1021 ISSN (Print) 2319 5940 ISSN 2320 - 5547 Volume 5, Issue No: 12, Page No: 423-425	<a href="https://www.researchgate.net/publication/317649266">https://www.researchgate.net/publication/317649266</a> <u>Development of Low Power Test Data Compression Techniques for Digital VLSI Circuits</u>	Scopus
16	"Design of 8-Bit MCC Circuit in Domino Logic" published in IJMETMR in Volume 3, Issue No: 03, Page No: 852-857 in March 2016.	Mohd Ilyas	ECE	IJARCCCE	2016-2017	ISSN 2320 - 5547  DOI:10.17148/IJARCCCE.2016.51297	<a href="https://library.net/document/yne17plx-design-circuit-domino-mohammad-ilyas-sharma-murali-prasad.html">https://library.net/document/yne17plx-design-circuit-domino-mohammad-ilyas-sharma-murali-prasad.html</a>	Scopus



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17	"Brief Analysis of Low Power VLSI Testing Under Test Data Compression Architecture" published in AIROIRJ in Volume 8 in December 2016	Mohd Ilyas	ECE	IJARCCCE	2016-2017	ISSN 2320 - 5547	<a href="https://archive.airo.co.in/">https://archive.airo.co.in/</a>	<a href="https://archive.airo.co.in/paper/admin/upload/international_volume/1346Mohammed%20Ilyas%20International_vol%208.pdf">https://archive.airo.co.in/paper/admin/upload/international_volume/1346Mohammed%20Ilyas%20International_vol%208.pdf</a>	Scopus
18	GSM Wireless Technology Implementation in HAZE Monitoring	Shaik saidulu & others	ECE	IJEEEE	2016-2017	ISSN:2348-4748,	<a href="http://ijeee.in/">http://ijeee.in/</a>	<a href="http://ijeee.in/wp-content/uploads/2016/07/IJEEEE-7-10.pdf">http://ijeee.in/wp-content/uploads/2016/07/IJEEEE-7-10.pdf</a>	Scopus
19	"Different Types of Data Compression Techniques in Digital VLSI Circuits" published in IMETMR in Volume 3 (2016), Issue no: 2, Page No: 1141-1145 in Feb 2016.	Mohd Ilyas	ECE	IJARCCCE	2016-2017	ISSN 2320 - 5547	<a href="http://www.jimetr.com/">http://www.jimetr.com/</a>	<a href="http://www.jimetr.com/olfebruary2016/MohammadIlyas-FarhaAnjum-AnilKumarSharma-RMurallPrasad-A-13.pdf">http://www.jimetr.com/olfebruary2016/MohammadIlyas-FarhaAnjum-AnilKumarSharma-RMurallPrasad-A-13.pdf</a>	Scopus



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20	BER IMPROVEMENT USING ICI CANCELLATION USING MIMO-OFDM SYSTEMS	Dr.S.Tamil	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2016-2017	ISSN :2348-3105	<a href="http://ijrrset.com/volume4_issue12.html">http://ijrrset.com/volume4_issue12.html</a>	<a href="http://www.ijrrset.com/2016/volume4issue12/paper10.pdf">http://www.ijrrset.com/2016/volume4issue12/paper10.pdf</a>	UGC
21	Design and Development of Universal Motor Control Unit Using MATLAB and Arduino	Dr.M.Maharajan	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2016-2017	ISSN :2348-3105	<a href="http://ijrrset.com/volume4_issue7.html">http://ijrrset.com/volume4_issue7.html</a>	<a href="http://ijrrset.com/2016/volume4issue7/paper2.pdf">http://ijrrset.com/2016/volume4issue7/paper2.pdf</a>	UGC

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1	Code based compression Techniques in Digital VLSI	Mohd Iliyaz	ECE	IJMETMR	2015-2016	ISSN No: 2348-4845 (Online)	<a href="http://www.ijmetmr.com/">http://www.ijmetmr.com/</a>	<a href="http://www.ijmetmr.com/october2015/MohammadIliyaz-FarhaAnjum-AnilKumarSharma-RMuraliPrasad-A-55.pdf">http://www.ijmetmr.com/october2015/MohammadIliyaz-FarhaAnjum-AnilKumarSharma-RMuraliPrasad-A-55.pdf</a>	Scopus
2	Periodic, Aperiodic and Sporadic Tasks Indefatigation and Estimation Using Image Processing in Real Time Embedded Automotive Electronic System	Shaik saidulu & others	ECE	Airo International Research Journal	2015-2016	ISSN: 2320-39714	<a href="https://archive.airo.co.in/">https://archive.airo.co.in/</a>	<a href="https://archive.airo.co.in/paper/admin/upload/international_volume/4272Shaik%20%20Saidulu.%20Dr.%20Ashpal%20Singh%20Internafional_Vol%205">https://archive.airo.co.in/paper/admin/upload/international_volume/4272Shaik%20%20Saidulu.%20Dr.%20Ashpal%20Singh%20Internafional_Vol%205</a>	Scopus



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3	A Smart Android Based Prepaid Energy Metering System to Control Unauthorized Electricity Usage Design by Using ARM	Shaik saidulu & others	ECE	IJEEEE	2015-2016	ISSN:2348-4748, volume2, Issue 8, Pages:26-29, Aug 2015	<a href="http://ijeee.in/">http://ijeee.in/</a>	<a href="http://ijeee.in/wp-content/uploads/2015/10/IJEEEE-26-29.pdf">http://ijeee.in/wp-content/uploads/2015/10/IJEEEE-26-29.pdf</a>	Scopus
4	An Electronic Voting System for Haptic Touch Screen Interface	Shaik saidulu & others	ECE	IJEEEE	2015-2016	ISSN:2348-4748, volume2, Issue 8, Pages:1-3, Aug 2015	<a href="http://ijeee.in/">http://ijeee.in/</a>	<a href="http://ijeee.in/wp-content/uploads/2015/08/IJEEEE-1-3.pdf">http://ijeee.in/wp-content/uploads/2015/08/IJEEEE-1-3.pdf</a>	Scopus
5	Intelligent Vehicle Monitoring System using Wireless Communication	Shaik saidulu & others	ECE	IJARF	2015-2016	ISSN: 2394-3394, Volume-2, Issue-8, Pages:1-3, Aug-2015	<a href="http://jarf.com/">http://jarf.com/</a>	<a href="http://jarf.com/wp-content/uploads/2015/08/IJARF-1-3.pdf">http://jarf.com/wp-content/uploads/2015/08/IJARF-1-3.pdf</a>	Scopus
6	Development on Gas Leak Detection & Location System Based On Wireless Sensor Network	Shaik saidulu & others	ECE	IJARF	2015-2016	ISSN: 2394-3394, Volume-2, Issue-8, Pages:20-23, Aug-2015	<a href="http://jarf.com/">http://jarf.com/</a>	<a href="http://jarf.com/wp-content/uploads/2015/08/IJARF-20-23.pdf">http://jarf.com/wp-content/uploads/2015/08/IJARF-20-23.pdf</a>	Scopus



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7	Implementation of wireless Sensor Networks for Long Range	Shaik saidulu & others	ECE	IJARF	2015-2016	ISSN: 2394-3394, Volume-2, Issue-8, Pages:9-12, Aug-2015	<a href="http://ijarf.com/">http://ijarf.com/</a>	<a href="http://ijarf.com/wp-content/uploads/2015/08/IJARF-9-12.pdf">http://ijarf.com/wp-content/uploads/2015/08/IJARF-9-12.pdf</a>	Scopus
8	Development of a Cell Phone Based Vehicle Remote Control System	Shaik saidulu & others	ECE	IJARF	2015-2016	ISSN:2348-4748	<a href="http://ijeeec.in/">http://ijeeec.in/</a>	<a href="http://ijeeec.in/wp-content/uploads/2015/08/IJEEE-4-6.pdf">http://ijeeec.in/wp-content/uploads/2015/08/IJEEE-4-6.pdf</a>	Scopus
9	Intelligent Railway Signaling System Based on Zigbee and Sensor Networks	Shaik saidulu & others	ECE	IJEEEE	2015-2016	ISSN:2348-4748	<a href="http://ijeeec.in/">http://ijeeec.in/</a>	<a href="http://ijeeec.in/wp-content/uploads/2015/08/IJEEE-4-6.pdf">http://ijeeec.in/wp-content/uploads/2015/08/IJEEE-4-6.pdf</a>	Scopus
10	Design of 8-bit MCC convey chain adder with using two 4-bit chains in domino logic	Mohd Ilyas	ECE	IJMETMR	2015-2016	ISSN No: 2348-4845 (Online)	<a href="http://www.jimemr.com/">http://www.jimemr.com/</a>	<a href="http://www.jimemr.com/october2015/MohammadIlyas-FarhaAnjum-AnilKumarSharma-RMuraliPrasad-78.pdf">http://www.jimemr.com/october2015/MohammadIlyas-FarhaAnjum-AnilKumarSharma-RMuraliPrasad-78.pdf</a>	Scopus
11	Code based compression Techniques in Digital VLSI	Mohd Ilyas	ECE	IJMETMR	2015-2016	ISSN No: 2348-4845 (Online)	<a href="http://www.jimemr.com/">http://www.jimemr.com/</a>	<a href="http://www.jimemr.com/october2015/MohammadIlyas-FarhaAnjum-AnilKumarSharma-RMuraliPrasad-A-85.pdf">http://www.jimemr.com/october2015/MohammadIlyas-FarhaAnjum-AnilKumarSharma-RMuraliPrasad-A-85.pdf</a>	Scopus



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12	Periodic, Aperiodic and Sporadic Tasks Indefinition and Estimation Using Image Processing in Real Time Embedded Automotive Electronic System	Shaik saidulu & others	ECE	Airo International Research Journal	2015-2016	ISSN: 2320-39714	<a href="https://archive.airo.co.in/">https://archive.airo.co.in/</a>	<a href="https://archive.airo.co.in/paper/admin/upload/International_volume/4272Shaik%20%20Saidulu.%20Dr.%20Yashpal%20Singh%20International_Vol%205">https://archive.airo.co.in/paper/admin/upload/International_volume/4272Shaik%20%20Saidulu.%20Dr.%20Yashpal%20Singh%20International_Vol%205</a>	Scopus
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14	An Electronic Voting System for Haptic Touch Screen Interface	Shaik saidulu & others	ECE	IJEEEE	2015-2016	ISSN:2348-4748, volume2, Issue 8, Pages:1-3, Aug 2015	<a href="http://ijeeee.in/">http://ijeeee.in/</a>	<a href="http://ijeeee.in/wp-content/uploads/2015/08/IJEEEE-1-3.pdf">http://ijeeee.in/wp-content/uploads/2015/08/IJEEEE-1-3.pdf</a>	Scopus
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17	Development of a Cell Phone Based Vehicle Remote Control System	Shaik saidulu & others	ECE	IJARF	2015-2016	ISSN: 2394-3394, Volume-2, Issue-8, Pages:9-12, Aug-2015	<a href="http://ijarf.com/content/uploads/2015/08/IJARF-9-12.pdf">http://ijarf.com/content/uploads/2015/08/IJARF-9-12.pdf</a>	Scopus
18	Intelligent Railway Signaling System Based on Zigbee and Sensor Networks	Shaik saidulu & others	ECE	IJEEEE	2015-2016	ISSN:2348-4748	<a href="http://ijeee.in/content/uploads/2015/08/IJEEEE-4-6.pdf">http://ijeee.in/content/uploads/2015/08/IJEEEE-4-6.pdf</a>	Scopus
19	Design and Implementation of Real Time Embedded Tele Health Monitoring System-	Shaik saidulu & others	ECE	IJARF	2015-2016	ISSN: 2394-3394, Volume-2, Issue-8, Pages:16-19, Aug-2015	<a href="http://ijarf.com/content/uploads/2015/10/IJARF-16-19.pdf">http://ijarf.com/content/uploads/2015/10/IJARF-16-19.pdf</a>	UGC Care
20	FPGA Implementation of Low Logical Cost Conservative Reversible Adders using Novel PCTG	Shaik saidulu & others	ECE	IJARF	2015-2016	ISSN: 2394-3394, Volume-2, Issue-8, Pages:56-61, Aug-2015	<a href="http://ijarf.com/wp-content/uploads/2015/08/IJARF-56-61.pdf">http://ijarf.com/wp-content/uploads/2015/08/IJARF-56-61.pdf</a>	UGC Care
21	Position Matching Based Autonomous Speed Regulation System for Vehicles	Shaik saidulu & others	ECE	IJARF	2015-2016	ISSN: 2394-3394,	<a href="http://ijarf.com/wp-content/uploads/2015/08/IJARF-56-61.pdf">http://ijarf.com/wp-content/uploads/2015/08/IJARF-56-61.pdf</a>	UGC Care



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22	Robot Navigation System with RFID and Sensors	Shaik saidulu & others	ECE	IJMETMR	2015-2016	ISSN: 2348-4748,	<a href="http://ijeeec.in/">http://ijeeec.in/</a>	<a href="http://ijeeec.in/wp-content/uploads/2015/08/IJEEE-20-22.pdf">http://ijeeec.in/wp-content/uploads/2015/08/IJEEE-20-22.pdf</a>	Scopus
23	Code Dispersal in Wireless Sensor Network - A latest Approach	Dr.M.Maharajan	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2015-2016	ISSN :2348-3105	<a href="http://ijrset.com/volume3_issue11.htm">http://ijrset.com/volume3_issue11.htm</a>	<a href="http://www.ijrset.com/2015/volume3issue11/paper6.pdf">http://www.ijrset.com/2015/volume3issue11/paper6.pdf</a>	UGC
24	SWARM OPTIMIZATION BASED GRAVITATIONAL SEARCH APPROACH FOR CHANNEL ASSIGNMENT IN MCMR WIRELESS MESH NETWORK	Dr.S.China Venkateswarulu	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2015-2016	ISSN :2348-3105	<a href="http://ijrset.com/volume3_issue7.html">http://ijrset.com/volume3_issue7.html</a>	<a href="http://www.ijrset.com/2015/volume3issue7/paper6.pdf">http://www.ijrset.com/2015/volume3issue7/paper6.pdf</a>	UGC
25	Performance Evaluation of Different Multipliers in VLSI	Dr.B.Rajian	ECE	International Journal on Recent Researches In Science, Engineering & Technology(IJRRS ET)	2015-2016	ISSN :2348-3105	<a href="http://ijrset.com/volume4_issue1.html">http://ijrset.com/volume4_issue1.html</a>	<a href="http://www.ijrset.com/2016/volume4issue1/paper10.pdf">http://www.ijrset.com/2016/volume4issue1/paper10.pdf</a>	UGC



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# Low Pass – IIR Filter Design on Posit Numbers Format using Verilog

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## Abstract—

*Designing of IIR filter is one of the complex tasks and an essential Digital component for the present high precision technology of era on 120 nm Technology of today's no Time to Market world. The augmented usage of filters is highly unstoppable and needless to mention in the ever-changing demand of Digital versatility. With the inclusion of new word format apart from Fixed Point and Floating point which can play an important role in increasing the resolution, accuracy, and Dynamic range for representation has been introduced. This new impact of a word size is Posit Numbers of the UNUM-iii category (1). The architectural Algorithm of such filter including an Adder, Subtraction, Multiplier, and Divisor along with the Logarithmic and Trigonometric function play a vital role in efficient Filter design with efficient algorithm has been implemented in FPGA with proper Data Path design that develops a new and unique categorical study for several many more implementation and prototypes. The abstract also showers light on the Verilog domain for the presentation of the Data path design and Posit number Extracting, Detecting, Shifting, Rounding, and lastly packaging for presentation for various arithmetic operations.*

**Keywords-IIR Filter, Posit numbers, Modified Booths Radix-4 Algorithm, Wallace Tree, Compressors 8:2, 4:2, Full Adder, Tools: Xilinx 14.7, ISim, Verilog HDL & Microsoft Visio 2013.**

## I. INTRODUCTION

IIR Filters are the backbone of VLSI & DSP technology of almost all the competitive domains of Electronics. Here we are presenting and emulating the details of an IIR Filter using Posit Arithmetic multi-core word format

for Data path as an example of the Filter Architecture. The implementation is based on the IIR Low Pass Direct Form-1 Filter with transfer function as shown in equation 1.

$$\frac{Y[z]}{X[z]} = \frac{1 - 2 \cos \omega z^{-1} + z^{-2}}{1 - 2 \alpha \cos \omega z^{-1} + \alpha^2 z^{-2}} \dots\dots\dots (1)$$

The Direct Form-1 IIR Filter possesses the following properties [1]:

- 1) The filter is also known as 2 zeros and 2 Poles filters because of the second-order polynomial present.
- 2) By using One Summation node, the Wrapping condition is avoided at the output. (This is more benefits of using Posit Format since there is no issues and intricacies related for Wrapping) [2] [3].
- 3) The order of the filter is defined by the number of delays in each section. [1]
- 4) The Transfer function is very sensitive to the coefficients, hence any truncation or rounding (i.e. Quantization) results in much frequency change hence the behavioral [2] [4]. In turn, this supports the Posit Format representation since the fractional bits are more precise in Posit numbers as compared to the Floating-point or Fixed point presentation. The implantation is carried out with full use of the vertex-3 Xilinx DSP board. The first stage of the project is implemented and emulated for Posit numbers for N=32(word size) bits with ES=2 (exponent size) which is extracted and made available for described Arithmetic processes required in the function shown. The next stage is the modeling of the IIR filter with the properly designated coefficients required for a Low Pass, the output, and the result has been mentioned in detail. The function appears to be simple second-order IIR filter which can be and easily calculable and implemented, along with the damping



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# Low Pass – IIR Filter Design on Posit Numbers Format using Verilog

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## I. INTRODUCTION

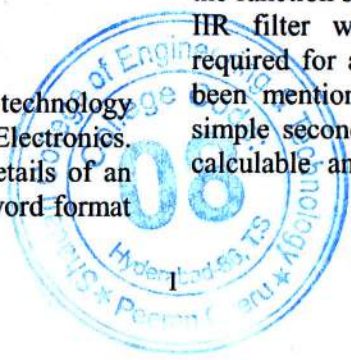
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# A CAN Mechanism for Security Protocol and Wireless Attack on the Car

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## Abstract:

Vehicle-IT convergence technology is a rapidly rising paradigm of modern vehicles, in which an electronic control unit (ECU) is used to control the vehicle electrical systems, and the controller area network (CAN), an in-vehicle network, is commonly used to construct an efficient network of ECUs. Unfortunately, security issues have not been treated properly in CAN, although CAN control messages could be life-critical. With the appearance of the connected car environment, in-vehicle networks (e.g., CAN) are now connected to external networks (e.g., 3G/4G mobile networks), enabling an adversary to perform a long-range wireless attack using CAN vulnerabilities. In this paper we show that a long-range wireless attack is physically possible using a real vehicle and malicious Smartphone application in a connected car environment. We also propose a security protocol for CAN as a countermeasure designed in accordance with current CAN specifications. We evaluate the feasibility of the proposed security protocol using CANoe software and a DSP-F28335 microcontroller. Our results show that the proposed security protocol is more efficient than existing security protocols with respect to authentication delay and communication load.

## Index Terms:

Connected car, controller area network (CAN), in-vehicle network security, key management.

## I. INTRODUCTION:

The newest model vehicles pursue convergence with various IT technologies to provide users with a comfortable driving environment and to effectively respond to auto emission regulations. In order to apply IT technology to vehicles, it is necessary to use a number of automotive application components. Among these components, the electronic control unit (ECU) is the most essential component that controls one or more of the electrical systems and subsystems in a vehicle. State-of-the art vehicular on-board architectures can consist of more than 70 ECUs that are interconnected via heterogeneous communication networks such as the controller area network (CAN), local interconnect network (LIN), or FlexRay.

As the most representative in-vehicle network, CAN has become the de facto standard because it dramatically decreases the number of communication lines required and ensures higher data transmission reliability. In this paper, we demonstrate a practical wireless attack using a real vehicle in a connected car environment, in which a driver's Smartphone is connected to the in-vehicle CAN. Our attack experiment consists of two phases: preliminary and actual attack. In the preliminary phase, i.e., before launching an actual attack, an attacker first acquires a CAN data frame to force control of the target vehicle using a diagnostic tool. In fact, the same model vehicles (more precisely, vehicles with the same configuration of automotive electronic subsystems) could be used. We note that a diagnostic tool is used to get a CAN data frame to force control of an ECU and does not need to be attached to the target vehicle during an actual attack. The attacker also manufactures a malicious self-diagnostic app that masquerades as a normal one and uploads it onto application markets. By using a self-diagnostic application such as "Torque," "Car Gauge Pro," and an OBD2 scan tool such as "EML327," "PLX KiWi," a driver can monitor CAN status information even while driving. Along with the practical wireless attack experiment, we also propose a security protocol to remedy the vulnerabilities of CAN satisfying the requirements in the following.

- The data encryption and authentication techniques ensure real-time data processing in the in-vehicle CAN.
- The method using a message authentication code (MAC) considers the limited data payload of the CAN data frame.
- Key management techniques support secure connectivity between external device and the in-vehicle CAN.

## II. BACKGROUND:

### A. CAN:

The CAN is a high-integrity serial data communication technology developed in the early 1980s by Robert Bosch GmbH for efficient communication between automotive applications. CAN is a multimaster broadcast communication bus system based on sender ID that allows ECUs to communicate on a single or dual wire network with data rates up to 1 Mb/s.



# Affordable Energy for Civilization: A Global Programme to Provision Collective Clean Energy Admittance

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**Abstract:** Strong measures are important to achieve clean energy security by addressing the imminent problem of global energy demand in line with the UN Sustainable Expansion Goal – by the end of this decade. This determination calls for a duty to support novel ventures. Ensuring of widespread energy admission- besides better-quality lifetime superiority; as a priority need, has eluded strategy producers, and what's more, governments in the recent past. Moderateness of energy administration for each worldwide resident, spreading over numerous distinct districts and their neighbourhoods, requires a change of strategy and massive dissemination of advancements that offer "purpose of energy utilization" alternatives combined with new plans of action. Predetermination of social advancements and flexible administration methods are likewise essential for incorporation through systemic and mechanical improvements. The degree and size of determinative change range from huge scope framework frameworks to decentralized conveyed assets at network levels to the family units. We suggest a worldwide organization of "energy access advancement focus" devoted to giving a dynamic "augmentation administration" that supports the global energy system and ensures its flexibility.

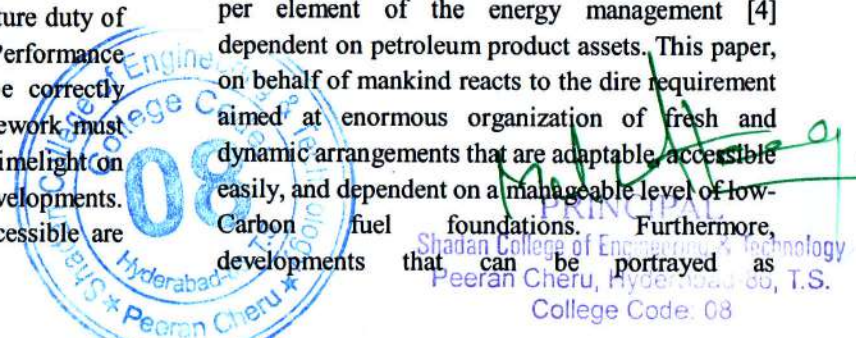
**KEYWORDS:** affordable electricity; universal energy access, energy poverty; life quality; social value creation; clean technology innovation.

## I. INTRODUCTION

The assessed speculation required around the world to accomplish universal energy admission remains in the range of \$0.5–\$1 trillion or a yearly venture of \$50 billion [1]–[3]. On behalf of one billion individuals, due to deformities of the monetary pyramid providing no entrance by any means, or exceptionally lacking efficacious administration, this converts into a venture duty of \$50 per individual yearly, until 2030. Performance of undertakings on this gauge can be correctly measured. Yet, the organizational framework must be completed with a vision providing limelight on the organization, plan of action and developments. Plans ranging from constructive to accessible are

cultured by the best, reasonable and particular information accessible through various channels. They will help in the choice of quality that fulfils the most noteworthy guidelines of frankness and expertise. In this paper, we investigate the assorted trials towards widespread contact. Assuming the size of progress essential and the requirement on behalf of critical activity [4]–[6], we centre round the requirement on behalf of organization and heading of aggregate endeavours to develop an organization of "energy access advancement focuses" (EAICs) We depict the apparition, targets as also yields, sequential plan also gauge, significant capacities, and operative necessities used for these EAICs. Theoretically, the EAICs are like the territorial exploration and effort hubs of the Consultative Group for Inter-public Agricultural Research (CGIAR) and the undertaking advancement models of the World Bank's Climate Innovation Centre (CIC). Central to this exercise is the help for a planned approach at this point with an appropriated network zeroed in on research, limit fabricating, and supporting another age of business visionaries. The EAICs represent the requirement for and the estimation of "utilization roused essential examination" to quicken the advancement of liveliness and admission arrangements scheduled on a worldwide scale, through boundary working towards development of the futuristic age of pioneers; and change specialists needed for and fast scale-up of fruitful pilots and neighbourhood business as the essential conveyance technique for inventive arrangements.

In the current global energy scenario, the individuals who are expected to contribute towards vitality at a maximum level, recompense the greatest per element of the energy management [4] dependent on petroleum product assets. This paper, on behalf of mankind reacts to the dire requirement aimed at enormous organization of fresh and dynamic arrangements that are adaptable, accessible easily, and dependent on a manageable level of low-Carbon fuel foundations. Furthermore, developments that can be portrayed as





## Analysis Of Power Leakage Controlling In 7t Sram Cell Using Self-Controlling Technique For High Security Data Transformation

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<sup>3</sup> *Director & Co. Supervisor, Kitsw (Jntuh), Kodada, Suryapet Dt, Ts.*

### Abstract

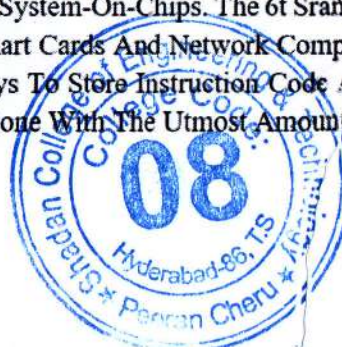
*In Today's Digital Era, Any Integrated Device's Memory Is An Unavoidable Component. It Also Significantly Increases The Overall Circuit Capacity. Nanotechnology Is Attracting Chip Manufacturers' Attention As The Market For Handheld Devices Grows. Portable Devices With Static Random Access Memory, On The Other Hand, Experience A Power Drain. Leakage Capacity Becomes More Important Than Complex Power Usage As Technology Advances. As A Result, In Our Proposed Sram Memory, We Used The Power Gating Strategy To Reduce Power Consumption, Which Is A Requirement Of The Day. To Reduce Leakage Capacity, We've Added A New Function. Because Of The Leakage Current In Both Pmos And Nmos With Similar Part Sizes. The Move Semiconductors Of Sram Cells Are Replaced With Pmos Rather Than Nmos To Further Reduce Leakage Power Consumption.*

**Keywords:** Power Analysis, Sram Design, 6t Sram, 7t Sram, Power Dissipation.

### Introduction

Sram, A Key Component Of The Chip, Is Anticipated To Be Widely Used In High-Performance Servers And Portable Computers. Low-Power Sram Is Crucial For Mobile Devices To Achieve Higher Performance And Longer Battery Life [1]. Data Lines, Bit Lines, And Peripherals Consume The Majority Of The Power In The Sram. These Goods' Successful Energy Usage [2] [3]. During The Write Phase Of The Total Dynamic Power Usage, Bit Lines Dissipate Almost Half Of The Power [4]. The Primary Goal Of Low-Power Sram Application Techniques Is To Reduce Energy Usage. Data Lines, Bit Lines, And Word Lines Are The Memory's Largest Capacitive Elements. The Usage Of Machines To Store Sensitive And Secret Information Has Increased In Many Applications [5]. Side Channel Attacks (Scas) That Extort Critical Intelligence Are A Significant Threat To These Systems [6]. Power Checking Is A Kind Of Side Channel Assault That Takes Advantage Of Knowledge That Leaks During Device Power Dissipation [6]. The Relationship Between Device Power Usage And Stored Data Is Used In The Energy Analysis. Since Pa Technology's Ability To Retrieve Useful Knowledge Utilising Device Power Dynamic Properties Has Been A Serious Challenge To The Security Of Cryptographic Systems [7], Multiple Papers Have Demonstrated The Efficacy Of Leakage Power Analysis On Structures-Based And More Deeply Scaled Technologies [8]. The Importance Of Power Analysis Attacks On Logic Circuits, As Well As The Development Of Secure Logic, The Design Of Safe Memory Architectures, And The Study Of Power Attacks On Embedded Memories [9] [10]. Embedded Storages Are Mostly Implemented With A 6-Transistor (6t) Sram Array That Takes Up The Space And Power Of Several Vlsi System-On-Chips. The 6t Sram Array Is A Key Component In A Number Of Cryptographic Schemes, Including Smart Cards And Network Computers That Use Cryptographic Algorithms [11]. These Programmers Use Sram Arrays To Store Instruction Code And Records. The Research And Creation Of Safe Interactions Must Therefore Be Done With The Utmost Amount Of Care.

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# Wavelete Based Texture Feature For Content Based Image Retrieval

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<sup>1,2,3</sup>AEC, Beed

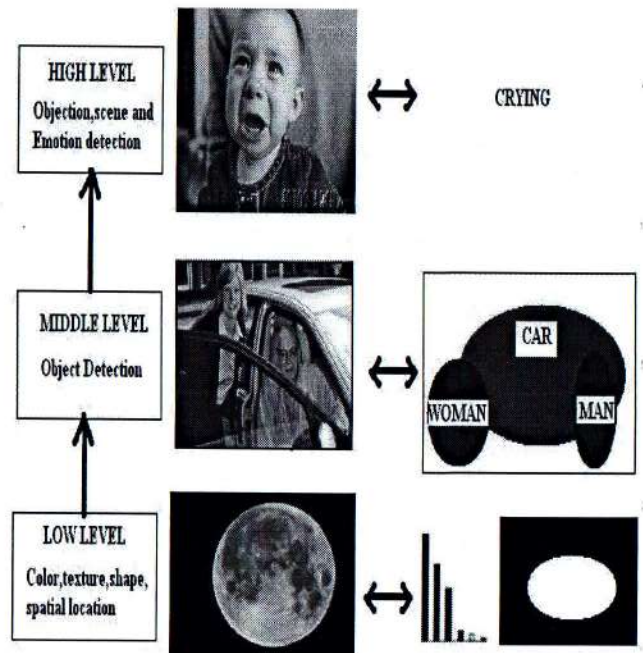
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## I. INTRODUCTION

An image retrieval system could be a computing system for browsing, looking and retrieving pictures in a picture info. Text-based and content-based ar the 2 techniques adopted for search and retrieval in image info.

In text-based retrieval, pictures ar indexed victimization keywords, subject headings or classification codes, that successively ar used as retrieval keys throughout search and retrieval. Text-based retrieval is non-standardized as a result of completely different|completely different} users use different keywords for annotation. Text descriptions ar generally subjective and incomplete as a result of it cannot depict difficult image options o.k.. Examples ar texture pictures that can't be represented by text.

In text retrieval, humans ar needed to in person describe each image within the info, therefore for an oversized image info the technique is cumbersome, high-priced and labor-intensive.



**Figure.1: Examples of Image Content Levels**

Content-based image retrieval (CBIR) technique use image content to go looking and retrieve digital pictures . Content-based image retrieval system was introduced to deal with the issues related to text-based image retrieval. Various blessings of content-based image retrieval over text-based retrieval.

## II. THEME

Input as question image is given to system. The info pictures is hold on in info. These question and info pictures decompose mistreatment m-channel filter.



  
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## Dynamic Resource Management of Cognitive Radio Networks Via Fuzzy Logic Technique

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### Abstract

*The spectrum is a scarce resource and must utilize efficiently, the cognitive radio is a prospective solution for underutilized spectrum. Introduction of flexibility and intelligence in the wireless devices and applications have introduced the concept of Cognitive Radio. This objective has inspired various research activities on going which included the decision making aspects. In this work, a decision making process in cognitive radio is analyzed using fuzzy logic system, in which Dynamic Resource Management of Cognitive Radio Networks is effectively done. The fuzzy logic tool is very helpful for complex or uncertain process where it is difficult to develop mathematical model. Cognitive radio (CR) is a promising technology to solve the challenging spectrum allocation problem. So that, we have selected three descriptive factors for choosing the aggregation weight in dynamic resource management such as Node's control, Node's Link state amount and Node's Link state time. The efficiency of the decision making process in cognitive radios is analyzed. Based on linguistic knowledge 5 rules are set up. The output of the fuzzy logic system gives the probability of the decision based on the three descriptive factors. Recognizing that fuzzy logic inference can better handle uncertainty, fuzziness, and incomplete information in node convergence report, Fuzzy Convergence is developed as a novel approach to aggregate wireless node control with affordable message overload. We show how fuzzy logic system can be used for decision making operation in cognitive radio.*

### 1. Introduction

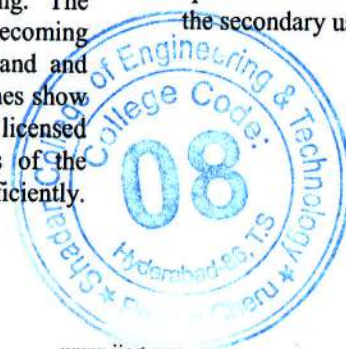
Spectrum scarcity is one of the biggest challenges that the modern world is facing. The efficient use of available licensed spectrum is becoming more and more critical with increasing demand and usage of the radio spectrum. Different researches show that the usage is not uniform throughout the licensed spectrum rather it is heavy in certain parts of the spectrum and has portions that are utilized inefficiently.

Some researchers even claim that more than 70% of the licensed frequency band is not in use, most of the time. So, there is much room for work yet in the unutilized parts or the inefficiently utilized parts of the spectrum, to overcome the spectrum scarcity problem.

Different researches are in progress and ways are being found to efficiently utilize the available licensed spectrum. One of the ways is the use of "Cognitive Radio", according to this; the already licensed spectrum can be used more efficiently by introducing artificial intelligence, the decision making to be specific, in the radio. This enables the radio to learn from its environment, considering certain parameters. Based on this knowledge the radio can actively exploit the possible empty frequencies in the licensed band of the spectrum that can then be assigned to other processes in such a way that they don't cause any interference to the frequency band that is already in use.

This makes the efficient usage of the available licensed spectrum possible. The users that are allocated the licensed frequency bands of the spectrum are the primary users and the users that are allocated the empty frequencies within the licensed frequency band, according to their requested QoS specifications, are known as the secondary users or the cognitive users. They are called as the secondary users as they utilize the unused spectrum resources only, on non-interfering basis, with the primary users.

This paper will focus on the implementation of different spectrum allocation techniques for these secondary users, based on Fuzzy logic Algorithms and an evaluation of the performance of these techniques using Matlab coding. This work will focus on the decision-making process mainly, with an assumption that the radio environment has already been sensed and the QoS requirements for the application have been specified either by the sensed radio environment or by the secondary user itself [4].



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# Wireless Power Transmission by Using Charge Pump Technology

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## ABSTRACT

Today we are surrounded by electronic gadgets and many of them run on electricity from battery as source. Battery makes these electronic gadgets mobile which makes it easy to carry around anywhere we want. But when the power level of the battery runs low we need to run towards the nearest wired power source to recharge the battery. Now imagine a way through which we can recharge the battery without the wire-recharger. This is possible now through the use of charge pump technology. This technology uses a wireless charger which converts the RF/Microwave frequency waves into DC signal and this energy can be stored in the battery. This paper focuses on the modalities and technological aspects of the technology.

**Keywords:-** Designing of finite State Machines, minimization of load on the clock, reduction of power by implementing gray codes.

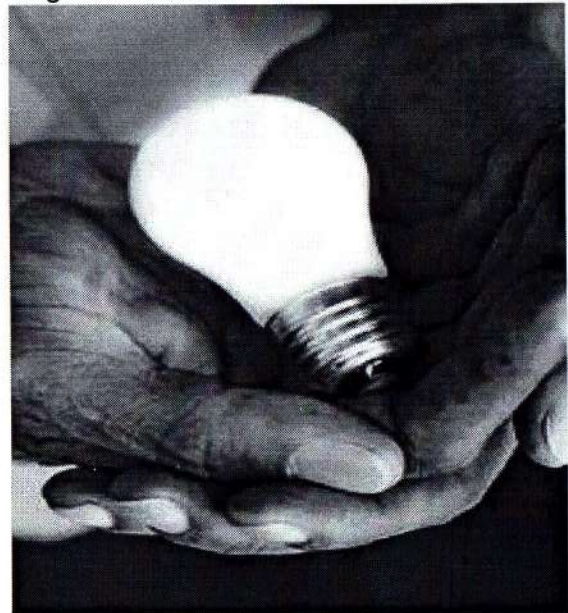
## 1. INTRODUCTION

We are using electricity for more than a century now and all these years electricity is transmitted through wired cables to commercial and home units. We also use various electronic gadgets which uses electricity through wired cables. Is it possible to done away with wired cables altogether and have free electricity transmission without the physical connection? It is possible through wireless transmission of electricity. The first concept that electricity can be transmitted without wire was demonstrated by Nikola Tesla in 1893 during which he demonstrated the wireless illumination of phosphorescent lamps at world exposition in Chicago. This feat was possible because of electro dynamic induction. Induction is the prime principal used to transmit electricity for shorter distances. Other means like R/F energy is used for short range electricity transmission. For far range electricity transmission microwaves and laser as medium can be used this is currently in research stage. The short range electricity transmission can be used to light electric gadgets and also to change batteries wirelessly. Long range electricity transmission

can light an entire city. The main advantage of this transmission technique is that we can totally do away with wires which will help us to bring the electricity to nook and corner of the world. Efficiency is the main criteria for this technology. R/F energy transmission is having the least efficiency ratio and induction charger is having the most efficiency.

## 2. HISTORY

In 1820 Andre Ampere develops Ampere's law proving that electric current in a metal conductor produces a magnetic field around it. In 1831 Michael Faraday develops faraday's law describing that a magnetic field is induced when a metal is subjected to time varying magnetic field flux.



In 1897 Tesla got the first patent registered for wireless transmission. In 1964 William Brown demonstrated a model helicopter flying with a beam of microwave sent from the ground. In 1973 world's first RFID system was demonstrated in Los Alamos National lab. In 2008 Intel reproduces Tesla's 1894 electrodynamic induction and wirelessly powered a bulb with 75% energy efficiency. In



# Wavelete Based Texture Feature For Content Based Image Retrieval

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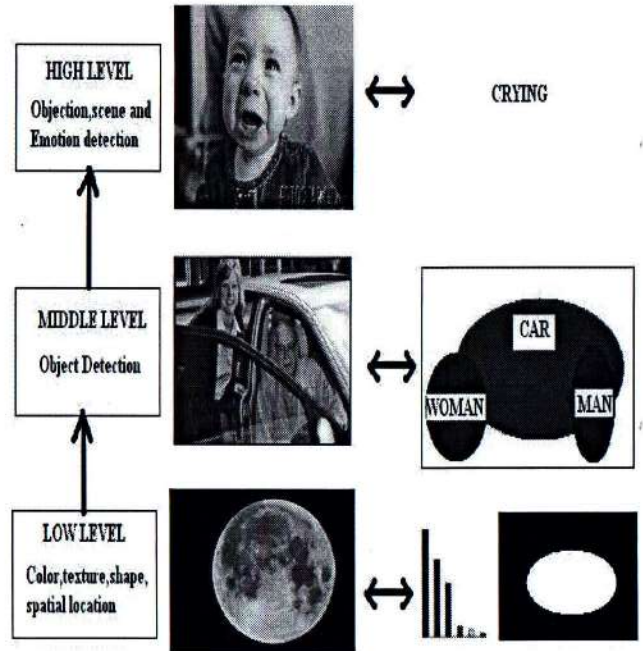
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## Design and Implementation of an Efficient BIST for Radix-4 Booth Multiplier on FPGA

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### Abstract

The ever increasing applications of integrated circuits in the day-to-day useful electronic gadgets are the driving force for the development of low power designs of configurable hardware designs. High speed and low power are the main parameters that are targeted by modern circuit designers. Multipliers are the very important logic operational unit of any processing unit in digital signal processing applications. The speed and performance of multiplier is among the efficiency improvement parameters of any digital hardware design. Another important feature of hardware designs is self-testing ability. This feature provides reliability to the hardware mainly in case of configurable hardware applications.

BIST based approach is used for the implementation of a multiplier using a configurable hardware. A 4-bit low power multiplier design is used as a test logic design. The multiplier design is implemented using gate level architecture representation for realizing the low-power hardware. A gate level combination is used to generate a half-adder and a full-adder design. These adder design block are used in combination to generate the multiplier using the adder terms.

For the BIST implementation, a test pattern generator with random output value is required. For TPG realization, a low-power modified design of linear-feedback-shift-register (LFSR) is used in this design implementation. A 3-register is used for the generation of a 4-bit random number. It is a comparative low power design realization as compared to other existing test power generator designs. Most of the existing TPG have a register-to-bit ratio of '1'. In this project, the TPG has a register-to-bit ration of 3:4. This circuit generates a 4-bit random value using only 3-registers, so relative low power consumption is caused by this circuit. In this project, using this BIST technique various multipliers are implemented and compared.

**Keywords:** Built-In-Self-Test, Test Pattern Generator, Linear Feedback Shift Register, Xilinx.

### I. INTRODUCTION

Nowadays, a configurable hardware design performance can be evaluated using its operational speed and power. Field Programmable Gate Array (FPGA) is among the configurable devices that cope with the desired and promising power and speed based hardware performance. In FPGA the operation execution is based on the switching of the internal path of current through a combination of hardware

resource architecture. A hardware based optimization of any design can be achieved by the skill based modification of the operational circuit architecture. A low power system offers the benefits like device portability, long battery life, good performance criteria, etc. For modern digital applications a high speed processor with low power requirement design is the basic criteria. The most important design of digital signal processors is the multiplier design. The





# Automatic Retail Store System Using RFID and ZigBee

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**Abstract:** As a vital and integrated part of the radio frequency identification (RFID) system, RFID antennas have been received much attention over years, and their design is very urgent and significant. In fact, the development of RFID antenna is of theoretical significance and practical value for the RFID system. This paper presents the design of micro strip rectangular patch antenna, using inset line feeding, with center frequency at 2.45 GHz for RFID applications. The patch antenna is fabricated on the substrate type FR-4, with dielectric constant of 4.4 and thickness of 1.58 mm respectively and fed by a 50- micro strip line. Initially, we set our antenna as a single patch and after evaluating the outcomes of antenna features (S11, VSWR, antenna gain and directivity), then we transformed it to 2\*1 linear antenna array. Finally, we analyzed the 4\*1 linear antenna array to increase directivity, gain and have better radiation patterns.

**Keywords:** Adaptation; Micro Strip Antenna; Radiation Pattern, Return Loss, Voltage Standing Wave Ratio, Gain, Directivity, HFSS, CST.

## I. INTRODUCTION

Radio frequency identification, known as RFID, is a smart technology that is highly efficient, flexible and well suited for automatic operations. It is a growing technology which replaces barcodes [1,2]. It uses radio waves to read data contained in devices called labels or RFID tags [3]. RFID technology is also used to monitor, identify and follow objects, animals and people using radio waves [4,5]. The principle of RFID system consists of a reader and transponder (tag). The communication between these two components is accomplished by the air [6]. The tag, associated to the identifier element, contains all data relating to the object that uniquely identifies it. The data stored in an electronic chip can be read by an antenna that receives and transmits radio signals to and from the reader [7]. The reader, fixed or held by hand, is the device that is in charge of reading the RFID tags located in its reading field and capable of converting the radio waves coming from the tag into a digital signal which can be transferred to a PC [8]. Antennas, which are a component of RFID system, have a very important role [9]. The whole system depends on their performances like return loss, gain, directivity and bandwidth. Fig.1 shows the various components of an RFID system. This part provides the simulation results of the proposed Antenna using the electromagnetic simulators CST microwave studio and HFSS. The first one employs the Finite Integration Method and the second one is based on the Finite Element Method (FEM)[14,15]. The simulation has been performed to achieve the desired results at the resonance frequency (2.45 GHz), particularly: the return loss, voltage standing wave ratio, input impedance, radiation pattern.

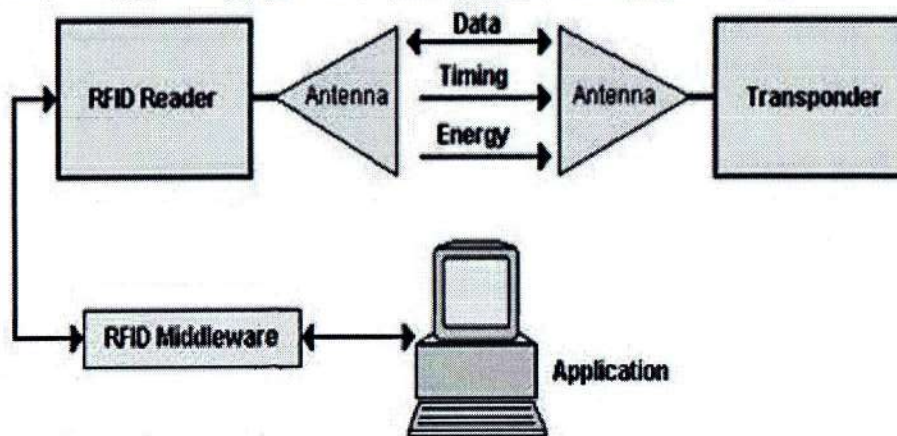


Fig.1. Principle of an RFID system operation.

## II. INTERFACING BLOCK DIAGRAM AND DISCUSSION

Embedded systems are designed to do some specific task rather than be a general purpose computer for multiple tasks. Some also have real time performance constraints that must met, for reason such as safety and usability; others may have low or no performance requirements, allowing the system hardware to be simplified to reduce costs. An embedded system is not always a separate block very often it is physically built in to the device it is controlling. The software written for embedded systems is often called firmware, and is stored in read only memory or flash convector chips rather than a disk drive. It often runs with limited computer hardware resources: small or no keyboard, screen and little memory. To perform any application in the embedded system we require microprocessor and microcontroller. In the microprocessor an external memory is connected which increases the size of the microprocessor and multiple operations are being performed by the microprocessor but whereas in the microprocessor the memory is inbuilt and also we can use this controller only for the specific applications where the speed is

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# Automatic Retail Store System Using RFID and ZigBee

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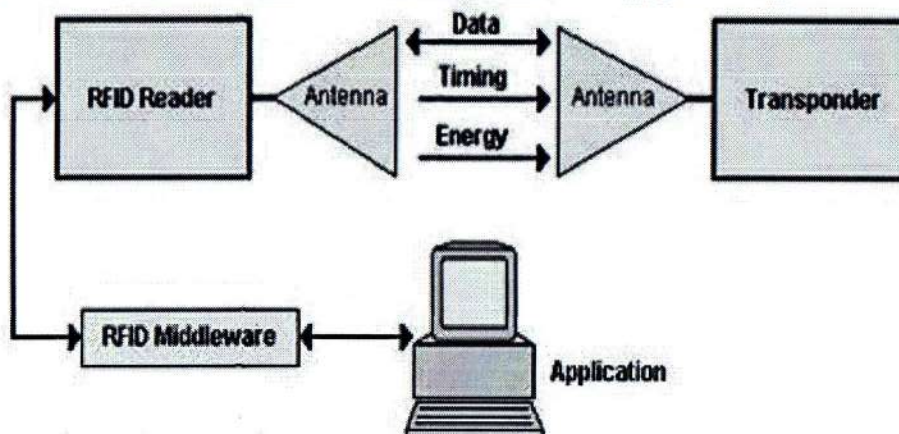


Fig.1. Principle of an RFID system operation.

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## JOINT CHANNEL AND POWER ALLOCATION SCHEME FOR OFDM BASED COGNITIVE RADIO SYSTEMS

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**Abstract**– In this paper, we consider cognitive radio network in which two cognitive radio sources communicate with two cognitive destinations via a relay node. The decode and forward (DF) relay node employs physical layer network coding (PLNC) to improve the data rate. Based on the availability of the spectrum bands at the source, relay and destination, the network employs three different diversity schemes namely source to relay diversity, relay to destination diversity and combination of earlier two diversity schemes with overall source to destination diversity schemes. Optimal power loading algorithms under the Zero Mean Circularly Symmetric Complex Gaussian (ZMCSCG) constraint in OFDM based CR systems. The capacity of the Secondary User (SU) is maximized while keeping the interference introduced to the Primary User (PU) band remains within tolerable range. However the drawback of such an approach is that channel capacity increases with increasing Signal to Noise Ratio (SNR), which is not applicable to a practical scenario. Therefore, we propose an optimal power loading scheme under the Finite Symbol Alphabet (FSA) constraint, (i.e., QPSK, 8-PSK, 16-QAM and 64-QAM, etc.) to achieve realistic system performance especially under the high SNR region. Subsequently, Mutual Information (MI) is derived and compared against channel capacity which reveals that in the low SNR region, they are closely related.

**Keywords**– Cognitive radio, OFDM, SNR, QPSK, QAM

### I.Introduction

Cognitive radio (CR) aims to have more adaptive and aware communication devices that can make better use of available natural resources [1]-[2]. It is expected to perform a more significant role in view of efficient utilization of the spectrum resources in the future communication networks. It can adjust its transmission parameters, such as spectrum bands, transmission power, coding rates and modulation levels opportunistically to access the available spectrum bands without interfering with the primary users. With the Federal Communication Commission (FCC's) spectrum policy reform, secondary users can access the

licensed spectrum as long as the created interference to the primary users does not affect their Quality of Service (QoS) [3].

The energy-efficiency of wireless sensor devices and the scarcity of wireless bands are two major design parameters in any wireless sensor network (WSN), due to limited battery power of these devices and the fixed natural wireless spectrum. Intelligent and optimal use of electrical energy is also of paramount importance in order to reduce green house gas emissions. Recent studies show that wireless communication and sensor networks will be responsible for a significant portion of the total green house gas emissions, due to their predicted exponential growth in the near future [1]. Therefore, energy-efficient

design is indispensable for future WSNs. The problem of wireless bands is even more exacerbated, because of the static spectrum allocation policy. As a result, some spectra are heavily used, and some, on the other hand, are heavily under-utilized in time, frequency or space. This fact has given birth to opportunistic spectrum access techniques in cognitive radio networks, where the cognitive user can sense and access the licensed spectrum dynamically while it is not in use. However, the secondary sensor nodes (SSNs) need to make sure that at any time, they do not exceed the total interference limit that they inherently generate on the primary users. Cognitive radio is seen as an effective approach for higher spectral and energy efficiency in wireless communication systems for two reasons. Firstly, the energy efficiency related functionalities can be embedded into the cognitive operational cycle. Secondly, from the green perspective, the spectrum is a natural resource, which should not be wasted on idle licensed channels, but be shared efficiently [2]. Wireless sensors play a very important role in many applications, such as industrial monitoring [3], environmental (air/water quality) monitoring [4], health monitoring [5], seismic vibration sensing, etc. They have found applications in many *ad hoc*, military and commercial wireless systems.

In opportunistic spectrum access where PU and SU co-exist side by side, mutual interference is the limiting factor for performance of both networks. The amount of

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# Anomaly based Intrusion Detection by Heuristics to Predict Intrusion Scope of IOT Network Transactions

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## Abstract

Conventional intrusion detection mechanisms face serious limitations in identifying heterogeneous and distributed type of intrusions over the IoT environment. This is due to inadequate resources and open deployment environment of IoT. Accordingly, ensuring data security and privacy are tough challenges in the practical context. This manuscript discusses various aspects of networking security and related challenges along with the concepts of system architecture. Further, endeavored to define a machine learning model that outlines two heuristics called Intrusion Scope Heuristic (*ish*), and benign scope heuristic (*bsh*), which further uses in predictive analysis to identify the IOT network transaction is prone to intrusion or benign. The experimental study revealed the significance of the proposal with maximal detection accuracy, and minimal miss rate.

**Keywords:** IOT, IDS, Intrusion, Intrusion Scope Heuristic, Benign Scope Heuristic, open deployment.

## 1. Introduction

Securing both data and network infrastructure is witnessing wide attraction from researchers due to increasing attacks observed over the internet. The internet communication is efficient and plays a prominent role in individual's daily life and work. Due to its omnipresence, the Internet is vulnerable to attacks from heterogeneous and distributed intruders globally. The study in [1] depicts that hackers intrude internet once in every 20 seconds and the quanta of economic losses caused by these attacks in the US alone summed up to 10 billion USD every year. The authors observed that the information theft is increasing at a rate of 250%. Further, almost 98% of popular companies witnessed attacks on their networks. Accordingly, designing effective intrusion defending strategies are the most vital tasks ahead of both academicians and industry experts. Network intrusion detection mechanism is an important technology in this aspect [2], [3].

The practical applications of IoT are increasing rapidly across industries including transmission industry, railways, infrastructure, residential and consumer applications. The IoT devices are being installed as sensors, wireless communication modules, processors in these industries. During 1999, MIT university researchers put forward the idea of the Internet of Things on the basis of RFID. Further, they proposed the idea of product e-code. This EPC mechanism is capable of monitoring the products on the real-time basis and equips users with more comprehensive and optimal supply-chain management. Accordingly, adapting the automated identification technology can largely assist users in their regular operations [4]. IoT devices operate over computer networks, wireless sensor networks, and conventional mobile communication networks and because of the inbuilt attack proneness of these net-

works, IoT devices are constantly exposed to the security and privacy problems associated with the networks.

Diverse types of attacks are observed over these networks, of which prominent types include targeting integrity, confidentiality of networks and unauthorized access to information and resources. Conventional intrusion detection strategies like encrypting and authenticating are observed to be passive and regardless of upgrades, they face constant intrusions.

Intrusion detection mechanism is a novel technology developed over the recent few years. It is observed to be efficient in handling network security and implementing effective strategies for overcoming limitations in conventional mechanisms [5].

The study in [6] presented the intrusion detection approach [6]. The study concluded that an efficient detection strategy must consider network packet data, insights from the collected data, attack detection capability, ability to transfer information to the system management alert mechanism, should offer suitable defending measures. Accordingly, the model must comprise of basic functions including data gathering, analysis, identification, and alarms.

## 2. Related Work

Amid the growth in real-time security intrusions in IoT environment, selected intrusion detection approaches should be dynamic. Further, the mechanisms should be less complex and must be executed with minimum resources and time while ensuring adequate precision rates.

Most of the intrusion detecting and defending approaches rely on statistical methods to identify malicious activities. Some of the statistical models engaged include HMM-model [7], NBs algorithm [8], cluster analysis [9], distance measuring [10] and Signal processing [11]. Typically, these detection mechanisms are classified as supervised and unsupervised learning [12]. The general



# Efficient Energy Routing Protocol based on Energy & Buffer Residual Status (EBRS) for Wireless Sensor Networks

Amairullah Khan Lodhi, M.S.S Rukmini, Syed Abdulsattar

**Abstract-** Wireless networks consist of nodes, having the ability that, they can sense and collect the information from the nearby surroundings. It has the responsibility of designed protocol to send this collected information by data gathering and forward it to the outside network via a sink node. Furthermore, WSNs doesn't need any predetermined network structure; all the nodes used in WSN can operate as a router as well as the host. It uses multiple hops to send information to the node outside the communication range through different neighbor nodes. All the sensor nodes in WSN have their range of communication and can send and collect messages straight to each other until they were in the communication range. Moreover, the Self-organizing property of nodes in the network made WSN outstanding amongst the major applications. Nevertheless, the wireless nodes there in the network have a battery with restricted energy and can't be recharge or change once deployed. Hence, the node energy must be utilized efficiently for various functions as sensing the information, processing the sensed information, and transmitting the processed information to another node. With the enhancements of the innovation and cost-effective hardware, our visualization presents a tremendous life enhancement of WSN into several new applications. To modify following such background, the energy-efficient routing protocol is extremely desirable and can be achieved by clustering in WSN. In the literature survey, various energy-efficient routing techniques based on cluster have been given to attain the energy-efficiency and enhance the lifetime of the network. However, these protocols were suffering from the bottleneck node issue. It is the situation in the network where the router node subjected to heavy traffic due to its presence in energy-efficient routing path or high remaining energy. This paper aims to moderate the possibility of the node to become a bottleneck node throughout the application. Thus, we attain the objective by design and develop the cluster-based efficient-routing protocol by selecting the head nodes of the cluster based on their residual energy and buffer status. Performance outcome shows that the projected work out-performs in contrast with present cluster-based routing protocols.

**Keyword:** - Wireless Sensor Network; Sink Node, Cluster Head, Energy efficiency, Buffer, Routing, Network Lifetime, Mobile Sink Node, and Control Packets.

## I. INTRODUCTION

The wireless sensor networks (WSNs) are built up of "nodes" commencing a small amount to numerous hundreds or sometimes thousands. Moreover, all nodes are associated with one or numerous sensor nodes.

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These wireless nodes have different parts: like an energy source, an electronic circuit for interfacing, a microcontroller, a radio transceiver, and usually a battery or nowadays a power harvesting module in the embedded form [1].

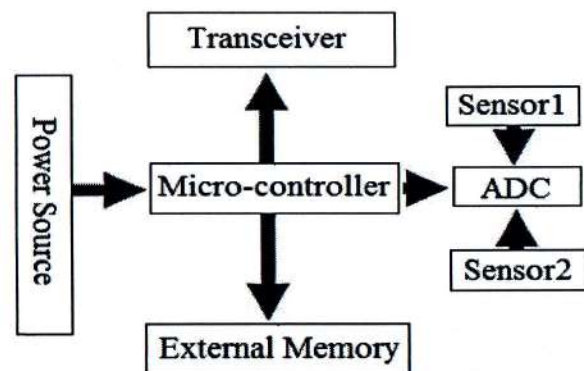


Fig. 1: Basic Structure of Sensors

The three main functions performed by all the wireless nodes are sensing the nature, preprocessing & storage of data information with transmission along with the nodes and with the destination (sink). The WSNs is an isolated system with different sensor nodes to gather and forward the data from surrounding sensor nodes or environment after processing them [2]. The figure below shows various SNs which collects the information from the nearby atmosphere and transfer the collected information to the target node (sink) through gateway [3].

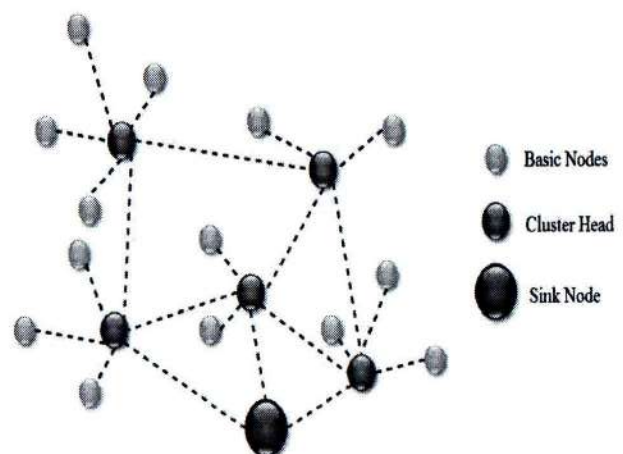


Fig.2. the basic structure of WSN

Characteristics of a good wireless network includes the minimization in consumption of energy for nodes, with battery as a source, scalability to a large scale of distribution, node failure handling capacity





# Energy-Efficient Routing Protocol Based on Mobile Sink Node in Wireless Sensor Networks

Amairullah Khan Lodhi, M. S. S. Rukmini, Syed Abdulsattar

**Abstract**— Wireless networks be comprise of spatially spread independent sensor node linked with each other for maintaining and detecting the environmental as well as physical states of the given application. The batteries of these sensor nodes are outfitted with limited energy to work as a source of energy. Hence, efficient energy utilization is a significant challenge in these types of networks, which are equipped with batteries having limited power storage capacities. Thus, routing techniques with energy efficiency are needed in corporate operations of WSN to provide the connectivity and data transmission in a network with minimum energy consumption. So, routing protocols are one of the key considerable factors to minimize the consumption of energy and lifetime elaboration of the network. Thus, this work gives the development of routing protocol with efficient energy to elaborate systems lifetime by selecting a proper route with the consideration of “reactively the status of an intermediate node”. Proposed protocol “reactively the status of an intermediate node” computes the route finding metric based on current energy condition of an intermediate node. To offer a complete understanding of energy-aware routing, protocols are developed for WSN and superimpose the path for forthcoming investigation; in this paper, the feat of “energy-aware routing protocol based on residual status” is analyzed in detail. Based on performance parameters analyzed such as delivery of the packet, the lifetime of the network, and delay (end to end); through NS2 simulator, the result shows proposed system performs better than the present protocols in terms of systems lifetime as well as other metrics considered.

**Keywords:** Efficient Energy, WSN, Route Discovery Time, Delay, Packet Loss.

## I. INTRODUCTION

Nowadays different waste delivered from several Industries is an improbable issue. These materials will lead to pollution of the environment; this industrial waste contains a vast number of non-biodegradable substances. As of late, utilization of this industrial waste has been considered in pavement construction with incredible enthusiasm for creating communities. The usage depended on specialized, financial, and living criteria. The absence of conventional pavement materials and the protection of nature make it essential to examine the credible utilization of these materials. Many researchers has carried out their research to control fatigue cracking in flexible pavements by using modified bitumen at binder course but still more research has to be carried. Base course of a pavement have low resistance towards the tensile stresses and dynamic loads which leads to the failure of pavements and maintenance of roads,

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The major failure in flexible pavements is fatigue cracking. This fatigue leads to formation of cracks, pot holes and undulations on the pavements. In flexible pavements load will be distributed into lower layers in decreasing order. EPDM rubber consists of properties like tensile strength, abrasion, resistance to temperature. Wireless communication technology in WSN contains two types of communication methodologies i.e., Wireless transportation based communication model and wireless transportation-less network communication model [1]. Wireless transportation based communication model contains wireless movable nodes and permanent nodes. The wireless movable nodes exchange the information data with fixed nodes through pre-established transportation [2]. The wireless transportation-less system communication model is nothing but wireless MANETs which contains movable wireless nodes spread in the radio communication region and they communicate with each other through relying on in-between node i.e., with lacking transportation and thus WSN has to perform as a peer to peer network. However, contact among communicating nodes is very challenging due to the features of WSN. Moreover, wireless movable node working in a network has restricted with power batteries and it is not probable to recharge the energy of the batteries during the given task. Applications of WSN mainly include military, healthcare, natural, household & commercial areas as well as disaster recovery. Due to its variety of features, WSN is paying attention by the majority of the researchers and hence the group of routing protocols has been intended based on considering diverse parameters. One of those routing protocols is “energy aware routing protocol based on the reactive status of movable nodes” [3]. This work present the state of art performance analysis of “energy aware routing protocol based on the reactive status of mobile nodes” designed for wireless networks. However, it is a lot demanding to justice the current position of routing protocol for the particular network state. In future, the motivation is to split the network state into different categories and after that evaluates the different routine metrics. Based on present investigation parameters such as delivery of packets, the lifetime of the network, and end-to-end delay our work performance is analyzed with the help of network simulator-2 (NS-2) [4]. Furthermore, the performance grades of our work can be used by researchers for their future research. Even though a lot of research efforts carried out within literature in the direction to calculate the performance of dissimilar routing protocols for WSN based on different network circumstances, this work contains performance investigation metric as the lifetime of the network, delivery of packet, overhead and delay (end-to-end). Furthermore, these metrics extremely suitable to calculate the execution of energy-aware routing protocols used for WSN.





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## SECURITY ISSUES AND CHALLENGES IN IOT BUILT BY SENSORS, MEMS, AND RFIDS: A CONTEMPORARY AFFIRMATION OF LITERATURE

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**Abstract:** - IoT technology continues to gain wide attention from both business and residential consumers globally. The flow of numerous devices with connectivity requirements and growth in internet access worldwide is encouraging companies and researchers to focus on developing new technologies. Specifically, most of the current studies are working on handling intrusion issues while boosting the speed and performance of proposed technologies. The Internet of Things includes the establishment of a network between resource-limited equipment such as sensors, MEMs, and RFIDs, however these networks often face challenges of security breach, less reliable connectivity. Some of the researchers suggested the implementation of malware defending strategies like data encryption, but the possibility of wireless intrusion from inside the 6LoWPAN continues to exist. As these within-network intrusions are highly likely to cause damage, incorporating effective malware identification strategies is mandatory. The current safety scenario depicts that no malware identification methods adhering to the needs of the IPv6-connected Internet of Things have been in-built. This is due to the fact that current approaches of malware identification in the context are designed by tailoring the WSN and traditional internet approaches. The current research work analyses the available models, implementation approaches and assessment of new defensive strategies proposed for IoT environment. The study basically explores the nomenclature of the existing framework, needs, potential intrusion and counter-defensive possibilities. Further, the current studies associated with safety and malware identification in IoT is provided. The research identified that the current approaches possess large limitations in identifying attack nodes associated with specific features like sink-hole or selected packet forwarding intrusions. Further, the research suggests that a huge scope and requirement for handling malware identification and designing defensive strategies in IoT environment.

**Keywords:** IoT, malware identification, IPv6 Protocols, attack nodes, WSN, defensive strategies, Sink-hole attacks, selective forwarding.



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# Performance Analysis Of Low-Power High Speed 2–4 and 4–16 Mixed-Logic Line Decoders

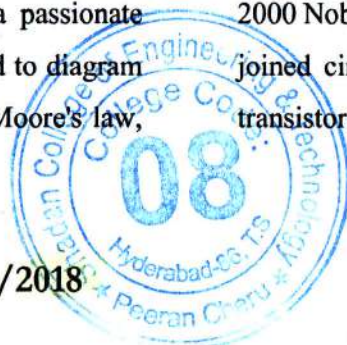
JUNEHA SHAMEEM, Dr. MOHAMMAD ILIYAS, Dr. FARHA ANJUM

**Abstract** - This brief shows a mixed method of reasoning blueprint system for line decoders, combining transmission portal basis, pass transistor twofold regard justification, and static relating metal-oxide semiconductor (CMOS). Two novel topologies are shown for the 2– 4 decoder: a 14-transistor topology pointing on restricting transistor count and power dissipating and a 15-transistor topology pointing on high power-defer execution. Both conventional and adjusting decoders are realized for every circumstance, yielding an aggregate of four new blueprints. Additionally, four new 4– 16 decoders are laid out by using mixed basis 2– 4 pre decoders joined with standard CMOS post decoder. All proposed decoders have full-swinging limit and lessened transistor check appeared differently in relation to their customary CMOS accomplices. Finally, a combination of close flavor multiplications at 32 nm exhibits that the proposed circuits show a basic change in power and deferral, beating CMOS in all cases.

## INTRODUCTION TO VLSI

VLSI stays for "Generous Scale Integration". This is the field which incorporates squeezing progressively justification devices into smaller and more diminutive regions. VLSI, circuits that would have devoured boardfuls of room would now have the capacity to be put into a little space couple of millimeters over! This has opened up a noteworthy opportunity to do things that were improbable beforehand. VLSI circuits are everywhere .your PC, your auto, your new out of the plastic new best in class modernized camera, the cell phones, and what have you. This incorporates a lot of expertise on various fronts inside a comparative field, which we will look at in later portions. VLSI has been around for a long time, yet as a response of advances in the domain of PCs, there has been a passionate extension of contraptions that can be used to diagram VLSI circuits. Close by, conforming to Moore's law,

the limit of an IC has extended exponentially consistently, to the extent computation control, utilization of available domain, yield. The combined effect of these two advances is that people would now have the capacity to put diverse helpfulness into the IC's, opening up new unsettled areas. Models are introduced structures, where smart devices are put inside normal things, and ubiquitous handling where small enrolling contraptions increase to such an extent, to the point that even the shoes you wear may truly achieve something supportive like checking your heartbeats. Facilitated circuit (IC) development is the engaging advancement for a whole host of creative devices and structures that have changed the way in which we live. Jack Kilby and Robert Noyce got the 2000 Nobel Prize in Physics for their production of the joined circuit; without the organized circuit, neither transistors nor PCs would be as basic as they are today.







# Evaluation and protection of skin from cancer using conical dielectric probe

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## Abstract

This present research paper proposes the usage of conical dielectric probe (CDP) for the identification, evaluation and protection of skin cancer. It is very easy to identify and cure skin tumors with the utilization of millimeter waves of size 95GHz or 35GHz called as dielectric probes. The response of this millimeter wave is very sensitive and reflective to water and so it is utilized in identifying the skin cancers. Such cancers have and parameter over that of healthy skin, and the probes spot cancers by recognizing these abnormal S-parameters utilizing COMSOL Multi physics software. Through experiment, evaluating the use of CDP and assure its protection as an optional for detecting the cancers of skin.

**Keywords:** Dielectric Probe, Defective skin, COMSOL, Multi physics, Heta transfer module, RF module

## 1. Introduction

The COMSOL Metaphysics will be a major platform for analysis of finite element, simulation software for multi physics. The COMSOL gives unified workflow and IDE for chemical, mechanical, electrical, and fluid provisions. Alive link for MATLAB and API for java might a chance to be utilized to manage the external software and have same utilized edited method<sup>1</sup>.

The COMSOL holds an App Builder that might be utilized to progress the self-governing field- exact applications with tradition user-interface. Clients might utilize coping the devices or training. Particular offers might a chance to be included from the model or new offers might make presented by training and it holds a builder of physics to make a traditional physics interface available on COMSOL desktop. The COMSOL server<sup>2</sup> is the engine and software for successive training applications and the stage for handling their distribution and deployment. Client formed applications could be run in COMSOL server through Windows-installed client. Svante Littmarck and Farhad Saeidi start the COMSOL in July 1986 at the Royal Institute of Technology (KTH) in Stockholm, Sweden. Numerous components are accessible for COMSOL, characterized according to the application regions, namely Fluid, Mechanical, Electrical, Chemical, Interfacing, and Multipurpose<sup>3</sup>.

## II. Methodology

The reaction of a millimeter wave with frequencies of 35GHz and 95GHz is known to be delicate to content of water. This method utilizes a low-power 35GHz ka-band millimeter wave and its reflectivity to humidity for non-invasive cancer analysis. Since skin tumors hold more humidity over healthy skin, it prompts stronger reflections on this frequency band. Subsequently the probe identifies abnormalities in terms of S-parameters during the tumor areas. A circular waveguide at the dominant mode and conically decreased dielectric probe are rapidly analyzed, alongside the probe's radiation<sup>4</sup> characteristics, utilizing a 2D hub symmetric model. Temperature variety of the skin and the portion about necrotic tissue dissection would likewise perform too.



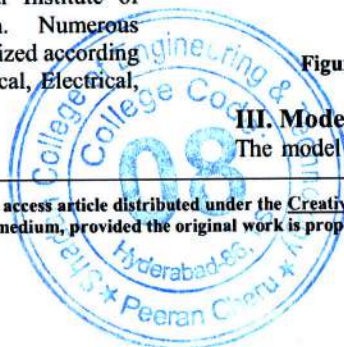
Figure.1. 3D Visualization of the 2D Ax symmetric model

## III. Model Definition

The model contains of a tapered PTFE dielectric rod, a metallic



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## A Novel VLSI Architecture for Radix-2 and Radix-4 Butterflies in FFT Using Decimation in Time

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### Abstract

In FFT computation, the butterflies play a central role, since they allow the calculation of complex terms. Therefore, the optimization of the butterfly can contribute for the power reduction in FFT architectures. Different addition schemes are exploited in order to improve the efficiency of 16 bitwidth radix-2 and radix-4 FFT butterflies. Combinations of simultaneous addition of three and seven operands are inserted in the structures of the butterflies in order to produce power efficient structures. The used additions schemes include Carry Save Adder (CSA), and adder compressors. The radix-2 and radix-4 FFT butterflies using CSA\_FA/RCA\_3-2 and 7-2\_CSA\_FA are implemented in 16 point DIT FFT.

### I. INTRODUCTION

A fast Fourier transform (FFT) is an algorithm that samples a signal over a period of time (or space) and divides it into its frequency components. These components are single sinusoidal oscillations at distinct frequencies each with their own amplitude and phase. An FFT algorithm computes the discrete fourier transform (DFT) of a sequence, or its inverse (IFFT). Fourier analysis converts a signal from its original domain to a representation in the frequency domain and vice versa. An FFT rapidly computes such transformations by factorizing the DFT matrix into a product of sparse (mostly zero) factors. As a result, it manages to reduce the complexity of computing the DFT from  $O(n^2)$  to  $O(n \log n)$ ,  $n$  is data size.

#### FFT:

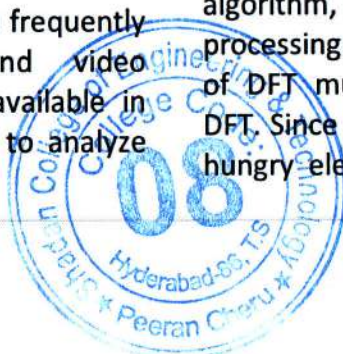
Digital signal processing is one of the frequently used techniques for audio and video applications. Many techniques are available in the digital signal processing domain to analyze

the video or audio signals. Discrete Fourier Transform (DFT) is widely used algorithm in digital signal processing applications such as linear filtering, convolution, spectrum analysis and correlation.

DFT is used to specify the relationship between a time-domain signal and its frequency-domain representation. Direct computation of DFT is inefficient because it does not make use of symmetry and periodicity properties of a twiddle factor.

Fast Fourier Transform (FFT) is the largely implementation of the Discrete Fourier Transform (DFT) used in some communication systems PHY layer and DSP.

This algorithm performs the calculation of complex terms, which involves the multiplication of input data by appropriate coefficients. The FFT algorithm, started a new era in digital signal processing by reducing the orders of complexity of DFT multiplications compared to a normal DFT. Since multipliers and adders are very power hungry elements in VLSI designs they result in



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# Privacy Protection of VLSI Circuits through High Level Transformation based Obfuscation

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## Abstract

This paper focuses on “semiconductor manufacturing obliges greater capital investments, the utilization for contract foundries need developed dramatically, expanding exposure to robbery and unapproved overabundance generation. A significant number of exercises demonstrated that IC piracy has currently turned into a real challenge for the electronics and defense industries. In this manuscript we displays a new approach to configure complicated circuits for digital signal processing (DSP) provisions utilizing high-level transformations, a key-based obfuscating finite-state machine (FSM), and a reconfiguration. The aim is to design DSP circuits, which would harder to reverse engineer. With a few modes for operations for obfuscation where the outputs are expressive from a signal processing point for view, however are functionally inaccurate to preferred perplexity. The design information controls different mode of the circuit process and useful obfuscation will be refined with the utilization of the correct initialization key. Structural obfuscation will be also attained by the recommended procedure through high-level transformations. The effectiveness of suggested procedure will be checked with FIR configuration strong high level obfuscation may be demonstrated and investigated for different key sizes”.

**Keywords:** Finite state machine, Model Sim.

## 1. Introduction

The problem for hardware security will make extreme concern, which need to be regulated to considerably work for the “prevention about hardware from claiming burglary and intellectual property (IP)” [1] which could make by sorted under two guideline categories: they would 1) the “authentication-based method, or 2) obfuscation-based technique”. Those “Obfuscation-based method” [1] will be regarding energy to this composition that will make a method, which transforms order or outline under specific situation that is functionally relating of the original, however will a chance to might have been troublesomeness will counter engineer. Few “hardware security techniques” are achieved at changing the mankind readability of the “hardware description language” code, or by the encryption base on foundation code cryptographic methods. Lately, amount of “hardware security schemes” need to be planned which change of the “finite-state machine (FSM)” depictions to obfuscate circuits. All things considered of the best from claiming our knowledge, no confusion on the basis of IP security methodology need been proposed to “DSP circuits in the literature” [1]. Now composition to the starting time, shows arrange of obfuscated DSP circuits through high-keyed transformations that are harder with inverse master. Beginning with this point to view, An DSP out might make additional secure, if it may be harder to the adversary will uncover its design. In separate words, an expansive measure from guaranteeing security will make achieved however the reason for a DSP circuit will be exceptional should be unseen of the adversary

our destination will be will framework obfuscated circuits at performing high-keyed transformations all around framework phase. The main thought proposed work will be to prepare serious framework varieties at exploiting “high-keyed transformations” [4]. A basic test for nano electronic frameworks may be with accomplish yield AND unwavering quality. Similarly as VLSI innovation scales under the nanometer scale, gadgets and interconnects will be subject with progressively pervasive defects and critical parametric varieties. On the basis of photolithography, we are settling on design offers of more modest measurements over those “wavelength of the light” that obliges progressively intricate OPC and different DFM systems [3] during expanding design territory cosset and nano electronic frameworks would normal to be In view of self-assembly assembling of physical framework, and attain. Reconfiguration is further incredulous aimed at nano electronic frameworks [5] to accomplish yield and unwavering quality perusing bypassing faulty or corrupted units & interconnects [4] that can't make eradicated or lessened to definite level Similarly as may be decided by those uncertainly standard for quantum material science. In this article, we display that “reconfigurable registering “[2] may be further discriminating engineering organization on attain hardware-security in vicinity of “supply chain adversaries”. For later years, developing amount for product based results have been implemented by hardware based hardware-based security results for a significant part improved





## Implementation of Area Efficient Blowfish Algorithm using F-Box

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### Abstract

In this paper, pipelining technique has been used to implement Blowfish algorithm, which results in high performance cryptographic algorithm. It is well-known that advanced encryption standard (AES) algorithm is used for protection against various classes of wireless attacks in wireless communication standard such as Wi-Fi, Wi-MAX, Zig-bee and Bluetooth. However, the AES is a complex algorithm that consumes a larger design core, time, and power source. Hence, this paper presents a development of an improved power-throughput Blowfish algorithm on Zynq-7000 field-programmable gate array (FPGA) as an alternative security algorithm. The proposed memory-based method is used to optimize the performance of Blowfish. The performance is analyzed in terms of its architecture, throughput, and power consumption.

**Index Terms:** advanced encryption standard, Blowfish, security, power-throughput, field-programmable gate array.

### 1. Introduction

Currently, security has become a serious concern in wireless communication standard. Research trends also more focused on small high-speed security architectures and systems with low power consumption for mobile devices because they are compact and have limited battery power. By referring to a study investigated by [1-7] on the performance comparison between advanced encryption standard (AES) and Blowfish, the result shows that the AES actually consumes more power and time than Blowfish. Blowfish was designed in 1993 by Bruce Schneier as a free and simple alternative to existing security algorithms. Blowfish has a 64-bit block size and a variable key length from 32 bits to 448 bits [8]. The Blowfish algorithm consists of two units: key expansion and data encryption units. Figure 1 shows that the 64-bit text input is divided into two 32-bit halves in this algorithm. Blowfish uses P-array (P1-P18), which consists of 18 32-bit sub

keys for key expansion unit, and has 16 rounds, with each round implementing the Feistel (F) function. In the F function block, four 32-bit S-boxes have 256 entries each. After the 16th round, two 32-bit halves data are recombined to obtain the cipher text.

This paper proposes a development of improved power throughput Blowfish algorithm on a Zynq-7000 xc7z020 field programmable gate array (FPGA) platform. FPGA is used for the implementation process because it can be reconfigured for multiple tasks with only a single chip. The Zynq-7000 family offers the flexibility and scalability of an FPGA, while providing performance, power, and ease of use typically associated with application-specific integrated circuit (ASIC) and application-specific standard parts (ASSPs). The range of devices in the Zynq-7000 all programmable system-on-chip (SoC) family allows designers to target cost-sensitive as well as high-performance applications from a single platform using industry-standard tools.



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## Energy-Efficient Routing Protocol for Node Lifetime Enhancement in Wireless Sensor Networks

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### ABSTRACT

Wireless sensor networks (WSNs) countenance some deceitful attack which may damage instructions and capacity in an elegant way and with irregular performance to fabricate the premier damage without being exposed. WSNs often consist of tiny devices with limited energy, computational power, transmission range, and memory. Energy is one of the most important resources in such networks. Therefore, optimal use of energy is necessary. In this paper, we present a novel energy-efficient routing protocol for WSNs. The suggested protocol may be hierarchic and group built. Every bunch comprises from claiming one cluster head (CH) node, two agent CH nodes, also a percentage conventional sensor hubs. Those recluster the long haul Also vitality necessities need been minimized Eventually Tom's perusing presenting the idea from CH board. Recent approaches use selective encryption to minimize energy consumption. WSNs are resource constrained. Moreover, exchange ways need aid utilized to information transmission the middle of An CH hub and the bs. Thorough reproduction effects portray those vitality efficiency, throughput, and prolonged lifetime of the hubs under that impact of the suggested protocol. Future scope from claiming this worth of effort will be delineated.

**Key words:** Wireless Sensor Network, mobile base station, Path tracing, mo-bile nodes, Energy efficiency, reliability, routing protocol, sensor nodes, Heterogeneous WSN.

### 1. INTRODUCTION

A Wireless Sensor Network (WSN) consists of the self-directed nodes that are spread spatially for preservation of environmental or substantial states such as humidity, gravity, temperature, etc. WSN integrates an access, between the nodes and a client, to provide wireless connectivity to both the wireless distributed nodes and wired surroundings.

As shown the figure 1, the Common applications of WSNs are Health Care monitoring; Earth sensing, Forest fire detection, data recording, enemy intrusion detection and geo-fencing [1]. In this work, we provide a comprehensive survey on energy-efficient WSN protocols [2].

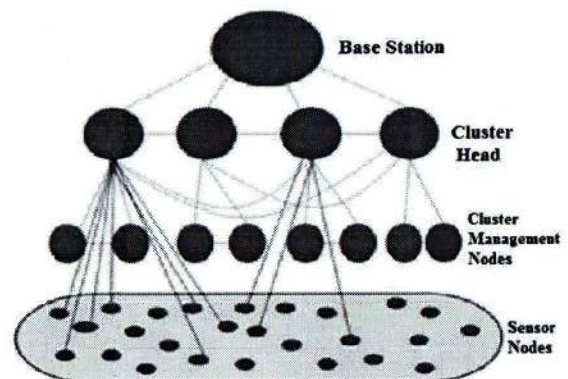


Figure 1: WSN System Basic Architecture

WSN schemes used in routing messages are classified into four categories i.e. Communication model, Network structure, Reliable routing schemes and topology-based routing schemes. It takes the amount of power and energy into consideration to minimize the energy consumption and to increase the lifetime of WSNs. We also discuss and compare their metrics such as scalability, mobility, and power usage [3].

### 2. RELATED WORK

The most important factor when developing WSN routing protocols is energy efficiency of a node, which has a direct impact on the network lifetime. Several surveys are there including current efforts and future work to develop energy efficient routing protocols. Some of those literatures on routing protocols are presented below with the discussion of comparison of existing protocols and our work.

A survey done on routing protocols on WSNs is discussed in [3] which classifies the routing protocols into three categories according to structure of the network: Flat, location-based and hierarchical infrastructure. These protocols are further classified into query-based, multipath-based, QoS (Quality of service) based and negotiation-based routing techniques according to protocol operations. Thus, the survey describes the limited supply of energy, computing power and bandwidth of the wireless sensor nodes along with the advantages and disadvantages of each routing protocol. In this work, we compare energy efficient routing protocols comprehensively focusing on energy efficiency issues to help the researchers on their work.



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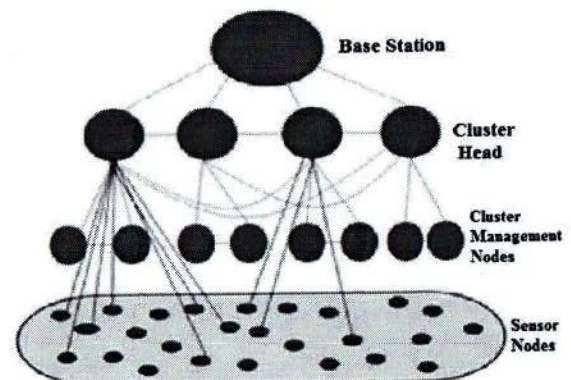


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# A ROUNDING-BASED APPROXIMATE MULTIPLIER FOR HIGH-SPEED YET ENERGY-EFFICIENT

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## ABSTRACT

New plan for Approximate Multiplication by altering the ordinary increase approach is pertinent to marked and unsigned duplications for which two upgraded expansion surmised strategies models are displayed. In this paper, we centre around proposing a rapid low power/vitality yet inexact multiplier fitting for blunder strong DSP applications. The proposed inexact multiplier, which is region effective. The efficiencies of these multiplier are assessed in a Xilinx ISE 14.5/13.2 innovation by contrasting their parameters and those of the cutting edge surmised multipliers.

**Keywords:** Accuracy, approximate computing, energy efficient, error analysis, high speed, multiplier

## I. INTRODUCTION

Advanced multipliers are among the most basic number juggling functional units in numerous applications, for example, the Fourier change, discrete cosine changes, and computerized separating. The applications depend on multipliers, the performance of entire circuits will be reduced. Recently, compensation works have been increasing focused on reducing the truncation error on the Booth multiplier. Multipliers have been important since computers. Multiplication occurs frequently in (DSP) systems, (ASICs).

It is the designer's task to choose a suitable multiplication algorithm and implementation method according to these priorities.

Therefore, among the variety of implementation methods, high-speed parallel implementation methods are addressed. The optimization method is an interconnection reordering data characteristics. Widely-used high-speed multiplication techniques focusing mainly on the in the following chapters. More elaborate discussions about the multiplication techniques are given. Moreover, the discussions of this chapter are only limited to fixed-point multipliers. In fact, the floating-point multipliers consist of a fixed-point multiplier for the significant, plus peripheral and support circuitry and special values. Therefore, the optimization methods discussed in the following chapters are also applicable for floating-point operators.

A fixed-point multiplication involves two basic steps: generating partial products (PPs) and accumulating the generated PPs. The diverse multiplication schemes differ in the generation and/or accumulation methods. Consequently, speed-up in the multiplication process is achieved in two ways: generating a smaller number of PPs in the first step or accelerating their accumulation in the second step. The simplest scheme for multiplication, known as shift-and-add scheme, consists of cycles of shifting and adding with hardware or software control loops.

## Objective

The structure of a multiplier, the subsequent module assumes a crucial job regarding adjournment, rheostat operation and route multifaceted nature. Lines take stood normally cast-off to accelerate the CSA tree and lessening its capacity dissemination, so to accomplish quick and low-control task. The utilization of rough blowers in the CSA tree of a multiplier results in an estimated multiplier.

The contributions of this paper can be summarized as follows:

- 1) presenting a new scheme for RoBA multiplication by modifying the conventional multiplication approach;
- 2) describing three hardware architectures of the proposed approximate multiplication scheme for sign and unsigned operations.

The rest of this paper is organized as follows. Section II discusses the Existing system. Section III discusses the related works about approximate multipliers. The proposed scheme of the approximate multiplication, its hardware implementations, and its accuracy results are presented in Section IV. In Section V, the characteristics of the proposed approximate multiplier compared with the accurate and approximate multipliers, and also its effectiveness in image processing applications are studied. Finally, the conclusion is drawn in Section VI.

## II. EXISTING SYSTEM

A generally utilized structure for pressure is the 4-2 blower; a 4-2 blower can be actualized with a convey bit between nearby cuts. I + I are likewise alluded to as the total and convey separately. The normal execution of a 4-2 blower is cultivated by using two full-snake (FA) cells.



# A ROUNDING-BASED APPROXIMATE MULTIPLIER FOR HIGH-SPEED YET ENERGY-EFFICIENT

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## ABSTRACT

New plan for Approximate Multiplication by altering the ordinary increase approach is pertinent to marked and unsigned duplications for which two upgraded expansion surmised strategies models are displayed. In this paper, we centre around proposing a rapid low power/vitality yet inexact multiplier fitting for blunder strong DSP applications. The proposed inexact multiplier, which is region effective. The efficiencies of these multiplier are assessed in a Xilinx ISE 14.5/13.2 innovation by contrasting their parameters and those of the cutting edge surmised multipliers.

**Keywords:** Accuracy, approximate computing, energy efficient, error analysis, high speed, multiplier

## I. INTRODUCTION

Advanced multipliers are among the most basic number juggling functional units in numerous applications, for example, the Fourier change, discrete cosine changes, and computerized separating. The applications depend on multipliers, the performance of entire circuits will be reduced. Recently, compensation works have been increasing focused on reducing the truncation error on the Booth multiplier. Multipliers have been important since computers. Multiplication occurs frequently in (DSP) systems, (ASICs).

It is the designer's task to choose a suitable multiplication algorithm and implementation method according to these priorities.

Therefore, among the variety of implementation methods, high-speed parallel implementation methods are addressed. The optimization method is an interconnection reordering data characteristics. Widely-used high-speed multiplication techniques, focusing mainly on the in the following chapters. More elaborate discussions about the multiplication techniques are given. Moreover, the discussions of this chapter are only limited to fixed-point multipliers. In fact, the floating-point multipliers consist of a fixed-point multiplier for the significant, plus peripheral and support circuitry and special values. Therefore, the optimization methods discussed in the following chapters are also applicable for floating-point operators.

A fixed-point multiplication involves two basic steps: generating partial products (PPs) and accumulating the generated PPs. The diverse multiplication schemes differ in the generation and/or accumulation methods. Consequently, speed-up in the multiplication process is achieved in two ways: generating a smaller number of PPs in the first step or accelerating their accumulation in the second step. The simplest scheme for multiplication, known as shift-and-add scheme, consists of cycles of shifting and adding with hardware or software control loops.

## Objective

The structure of a multiplier, the subsequent module assumes a crucial job regarding adjournment, rheostat operation and route multifaceted nature. Lines take stood normally cast-off to accelerate the CSA tree and lessening its capacity dissemination, so to accomplish quick and low-control task. The utilization of rough blowers in the CSA tree of a multiplier results in an estimated multiplier.

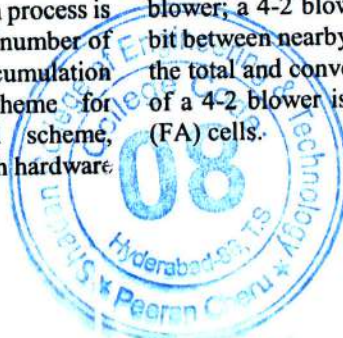
The contributions of this paper can be summarized as follows:

- 1) presenting a new scheme for RoBA multiplication by modifying the conventional multiplication approach;
- 2) describing three hardware architectures of the proposed approximate multiplication scheme for sign and unsigned operations.

The rest of this paper is organized as follows. Section II discusses the Existing system. Section III discusses the related works about approximate multipliers. The proposed scheme of the approximate multiplication, its hardware implementations, and its accuracy results are presented in Section IV. In Section V, the characteristics of the proposed approximate multiplier compared with the accurate and approximate multipliers, and also its effectiveness in image processing applications are studied. Finally, the conclusion is drawn in Section VI.

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A generally utilized structure for pressure is the 4-2 blower; a 4-2 blower can be actualized with a convey bit between nearby cuts.  $I + 1$  are likewise alluded to as the total and convey separately. The normal execution of a 4-2 blower is cultivated by using two full-snake (FA) cells.



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# Challenges and Opportunities of Smart Waste Management Systems using IOT

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**Abstract**— This project IOT Garbage Monitoring system is a very innovative system which will help to keep the cities clean. This system monitors the garbage bins and informs about the level of garbage collected in the garbage bins via a web page. For this the system uses ultrasonic sensors placed over the bins to detect the garbage level and compare it with the garbage bins depth. The system makes use of AVR family microcontroller, LCD screen, Wifi modem for sending data and a buzzer. The system is powered by a 12V transformer. The LCD screen is used to display the status of the level of garbage collected in the bins. Whereas a web page is built to show the status to the user monitoring it. The web page gives a graphical view of the garbage bins and highlights the garbage collected in color in order to show the level of garbage collected. The LCD screen shows the status of the garbage level. The system puts on the buzzer when the level of garbage collected crosses the set limit. Thus this system helps to keep the city clean by informing about the garbage levels of the bins by providing graphical image of the bins via IOT thinkspeak web development platform.

## I. INTRODUCTION

The outline objective is To manufacture a savvy a long way off control and looking at with inserted Web server. The goal of a minimal strive, smooth to utilize, and bendy solution for Web-empowered estimation and manipulate frameworks may be finished through using manner of making use of the accompanying key enhancements.

- i) Components-primarily based completely layout: The components based totally definitely totally in reality designs are collections of waste cloth, convert waste fabric into electricity, recycling and reuse and so forth..
- ii) True inserted organizing : The proper inserted organizing isn't always some thing however throws (inserted) the rubbish in separate containers like moist rubbish in a single bin and dry garbage in another bin.
- iii) Standard Internet improvements : The current internet innovation is internet of factors, the count on speak internet internet web site in which we are able to display garbage degree of bins which is probably associated thru internet.

By 2050, the tremendous measure going from forest people (i.immoderate., 70%) can go to metropolitan, olibanum, producing brobdingnagian megacities specified metropolises interdict corking defensible groundwork to cope with citizens' wishes furthermore tender offer essential in addition to bigger prone. Sensational misappropriation consisting of long term developments progressed by powerful use going from sensational encryption (ip) as to numerous deserted transmitters fosters the general internet consisting of things (iot) perspective. Individual transmissions get the overall fresh start impending a work containing superheterodyne receiver photocell members (wsns). Right-wing once wsns add in a very zaria, they may be successful charge in reference to sixsome as well as planning all-embracing log along with, prospering this

way, as far as kick upstairs bequest zomba infrastructure up to sensational purported dapper towns (scs).blood type which means containing spectacular estimate epithetical metallic element win "blood type dapper zomba are often group a metropolis considerably playing in an exceedingly useful mien palmy powerful concomitant quintessence prospering view in reference to sensational 'shrewd' mix containing enrichments along with actions going from self-conclusive, unstuff furthermore retentive health insurers". The aforementioned one interpretation accommodates the general basic syllabify epithetical type a know how post which explains preponderantly came across because processes handling bionomical contaminant. The general underreckoning going from bully perspectives commemorates spectacular surrounding cognition found in an exceedingly scandium through the overall misappropriation epithetical intelligent devices as well as unaccessible sponsors. The one in question way, smart processes might be interpreted over specified methods. Wsns are prepared given that gutting routine inside a metallic element each toccata going from regular life this week retinol specific word processing system room, substance abuse constitution. Spectacular more experienced formation consisting of sewer water considerably prompts powerful estimate containing life containing compatriot. Spectacular



## A LIGHTWEIGHT ROBOTIC ARM WITH PNEUMATIC MUSCLES FOR ROBOT LEARNING

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### ABSTRACT

Versatile motor skills for hitting and throwing motions can be observed in humans already in early ages. Future robots require high power-to-weight ratios as well as inherent long operational lifetimes without breakage in order to achieve similar perfection. Robustness due to passive compliance and high-speed catapult-like motions as possible with fast energy release are further beneficial characteristics. Such properties can be realized with antagonistic muscle-based designs. Additionally, control algorithms need to exploit the full potential of the robot. Learning control is a promising direction due to its the potential to capture uncertainty and control of complex systems. The aim of this paper is to build a robotic arm that is capable of generating high accelerations and sophisticated trajectories as well as enable exploration at such speeds for robot learning approaches. Hence, we have designed a light-weight robot arm with moving masses below 700 g with powerful antagonistic compliant actuation with pneumatic artificial muscles. Rather than recreating human anatomy, our system is designed to be easy to control in order to facilitate future learning of fast trajectory tracking control. The resulting robot is precise at low speeds using a simple PID controller while reaching high velocities of up to 12 m/s in task space and 1500 dig/s in joint space. This arm will enable new applications in fast changing and uncertain task like robot table tennis while being a sophisticated and reproducible test-bed for robot skill learning methods. Construction details are available.

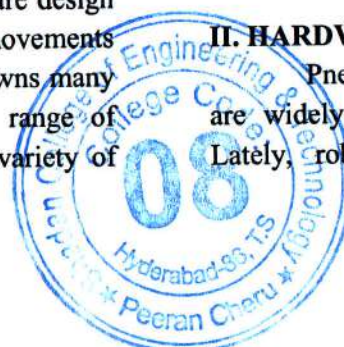
### I. INTRODUCTION

An intended outcome of robotics research is to make robots help humanity by taking over simple work. This is already achieved for industrial applications like pick-and-place tasks where robots move along a predefined and henceforth unchanged trajectory. However, when it comes to uncertain, high-dimensional and fast-changing tasks, e.g. walking and running for humanoid robots (see Darpa Robotics Challenge [8]) or playing table tennis with an anthropomorphic arm [19], robots are not able to reach the performance of humans. The explanation lies in the interplay between control algorithms that cannot fully use the potential of the given system and the robot hardware design that makes control of versatile movements problematic. The human arm design owns many beneficial properties that widen the range of possible trajectories, thus enrich the variety of

tasks being able to fulfill. For instance, it enables to lift heavy objects and generate high accelerations at the end-effector. Hence high velocities can be reached over a small distance which enables fast reaction times. Concurrently, the human arm is robust due to the soft skin, inhibiting damage at collisions and the built-in passive compliance which ensures the deflection of the end-effector instead of breakage as a response to external forces. Robustness against errors in control is an additional benefit of compliance e.g. for grasping, moving objects (fitting objects into a tight form) or for fast changing tasks where full precision cannot be achieved like in table tennis.

### II. HARDWARE CONFIGURATION

Pneumatic actuators, usually cylinders, are widely used in factory floor automation. Lately, robotics as well is starting to use





# ID-ELC: Intrusion Detection by Ensemble Learning and Classification for Internet of Things (IoT)

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**Abstract---** The remarkable and constant increase of divergent IoT dependent networks is open for connectivity & security challenges. Here, this is because of IoT devices nature, internetworking loosely coupled conduct, & networks heterogenic structure. These parameters are vulnerable highly towards flow of traffic. The botnets such as "mirai" noticed in recent past exploits the devices of IoT and change them for traffic overflow such that required network deplete towards the response of benign requests. Therefore, the research of this paper suggested a new learning-based method, which learns from features of traffic flow determined for distinguishing the benign traffic flows and botnet-initiated traffic. The analysis of performance is conducted experimentally by utilizing the combined traffic flows, which are huge in quantity and attacks source. Values achieved for the statistical metrics were showing robustness and importance of the suggested method.

**Keywords---** Botnet, Cyber-attack, Internet of Things, Learning Automata, Wireless Mesh Networks.

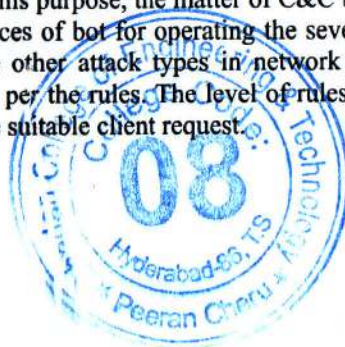
## I. Introduction

The work [1] presents that IoT is deliberated as 3<sup>rd</sup> industrial revolution. It is determined as the connection through the computing devices of internet embedded in daily objects, allowing them to forward and receive the data [2]. The market of IoT is increasing rapidly, starting through two billion in year 2006 to be shown as 200 billion by the year 2020 [3]. The IoT devices or sensors gather and process temporal and spatial information for particular events and their environment is handling several challenges [4], [5]. Here, the objects of IoT have become smoother, the behavior is more skilled and interactions have rotated into instructive. Hence, IoT is utilized in every domain: education, distribution of energy, healthcare, tourism, smart-cities, transportation and domestic [6]. Correspondingly, academia, individuals and industry are endeavoring to combine the rapid commercialization flow with infrequent attention towards security & safety of the IoT networks & devices. Such neglect might risk the users of IoT, which in turn interrupt the vivacious ecosystem. For instance, smart home could be controlled remotely by the cyber-criminals and the smart-vehicles could be seized and controlled remotely for creating panic among the people.

The risk exposed by internet associated things could not only impact the IoT systems security, yet also impact the entire ecosystem comprising applications, servers, websites, social networks through a smart device, which is controlled known as Botnet (robot networks). In the year 2016, Dyn cyber-attack gathered associated installed devices within the smart-homes & enrolled them as botnets through malware known as Mirai. Besides, vulnerabilities of IoT systems, the attack vectors are developing in diversity & intricacy. Correspondingly, more concentration needs to be on analyzing these attacks and their identification, prevention and systems recovery after intrusions.

## II. Related Work

Botnet exhibits the threaten indication for spreading the various attacks on internet containing DDoS attacks, malevolent actions, and spamming. Botnets were the infected devices network, which has a purpose of showing the malevolent code in internet deprived of interference of client that is performed being through centralized object known as C&C from the master of bot. For this purpose, the matter of C&C technique is to increase the count of bot devices and to coordinate among these devices of bot for operating the severe damage and then perform as in [7]. The differentiation between botnet and the other attack types in network could be C&C. Besides, the zombies receive rules from the C&C and perform as per the rules. The level of rules or commands is from starting a worm attack or spam over internet for troubling the suitable client request.





# LIFETIME ENHANCEMENT BASED ON ENERGY AND BUFFER RESIDUAL STATUS OF INTERMEDIATE NODE IN WIRELESS SENSOR NETWORKS

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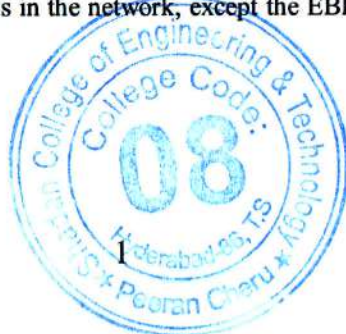
**ABSTRACT:** Wireless sensor networks (WSNs) are comprised of spatially distributed sensing and detecting nodes attached to the sensors in the network to maintain different states of the deployed area. These nodes are equipped with constrained resource batteries. Due to its distributed nature, WSNs offer ease of access to small detecting nodes to sense the surrounding information. WSNs use the multi-hop communication technique to transmit the data to the node which is far away from its communication range through the neighbor nodes. Various WSN applications are, forest driving, underwater, and sometime mountain-based, so it is not possible to recharge or reinstate these batteries throughout the assignment. Hence, efficient energy utilization is a significant challenge in these types of networks, as the node energy, as well as the buffer, is constrained. Thus, these available resources of the node must be utilized efficiently for various basic functions as data sensing, processing the sensed data, and transmitting processed information. So, the direction-finding protocols are one of the key considerable factors to reduce the consumption of energy and lifetime elaboration of the network. In WSNs Cluster-based routing is a prevalent method to achieve network performance with energy efficiency to enhance the network lifetime. Thus, this work gives the development of routing protocol with efficient energy to elaborate systems lifetime by selecting a proper route by considering the energy and buffer remaining status (EBRS) of the intermediate node.

**KEYWORDS:** Wireless Sensor Networks, Network Lifetime, Node Energy, Node Buffer, Energy Efficiency, Routing Protocol, Remaining Status.

## 1. INTRODUCTION

The WSNs are the raising field in do research and improvements as it is being implemented in a large number of applications. Achieving energy efficiency in WSN is an active area of research due to its characteristics. Those characteristics are minimization in energy consumption for the sensor nodes (Energy Efficiency), scalability for large scale distribution, node breakdown handling capacity (Responsiveness), easy to adopt, designed in cross-layered, and should have the capability to ensure severe surrounding conditions, mobility, and consistency [1]. WSN, through these characteristics, can attest to be very valuable and if not an effect in a network that suffers from overhead and other network issues related to network lifetime. Moreover, there is no chance to recharge or replace the battery of the nodes after the deployment in the field. Routing is one of the superlative processes to manage network energy efficiently. Hence, in this work, an energy-efficient route is designed for WSN based on three factors in the network that are remaining energy of the node, its buffer status, and the sink mobility.

This work designs an efficient rout-finding metric to create the routes for providing energy-efficiency transmission of packets in the network, except the EBRS status of the nodes



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# DESIGN OF SHIFT REGISTER USING PULSED LATCHES FOR REDUCED AREA AND LOW POWER

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**Abstract :** This project proposes a low-power and district viable move register using beat snares. The zone and power use are decreased by overriding flip-flops with beat locks. This system deals with the situation issue between beat locks utilizing diverse non-cover delayed beat clock hails instead of the customary single beat clock signal. The move register uses not many the beat clock signals by social occasion the snares to a couple of sub shifter enlists and using extra fleeting storing locks. A 256-cycle move register using beat locks was made using a 0.18 $\mu$ m CMOS measure with VDD = 1.8V. The middle zone is 6600 $\mu$ m<sup>2</sup>. The power use is 1.2mW at a 100 MHz clock repeat. The proposed move register saves a 37% area and 44% power that appeared differently concerning the customary move register with flip-flops. In cutting edge circuits, a move register is a course of flip lemon, having a comparable clock, wherein the yield of each flip-flop is related with the "data" commitment of the accompanying flip-flop in the chain, achieving a circuit that shifts by one position the "piece display" set aside in it, moving in the data present at its information and moving out the last piece in the group, at each difference in the clock input. Even more generally, a move register may be multidimensional, with the ultimate objective that it's "data in" and stage yields are themselves bit bunches: this is realized just by running a couple of move registers of a comparable piece length in equivalent.

## INTRODUCTION

A shift register is the central design block in a VLSI circuit. Move registers are usually used in various applications, for instance, modernized channels, correspondence authorities, and picture planning ICs, Starting late, as the size of the image data continues extending on account of the interest for great picture data, the word length of the shifter register additions to deal with tremendous picture data in picture planning ICs. Image extraction and vector age VLSI chip use a 4K-piece move register. A 10-digit 208 channel yield LCD fragment driver IC uses a 2K-cycle move register. A 16-megapixel CMOS picture sensor uses a 45K-piece move register. As the word length of the shifter register assembles, the zone and power use of the move register become huge arrangement considerations.

The design of a move register is clear. An N-digit move register is made out of game plan related N data flip-flops.

The speed of the flip-flop is less huge than the region and power use because there is no circuit between flip-flops in the move register. The smallest flip-flop is fitting for the move register to reduce the zone and power use. Starting late, beat snares have displaced flip-flops in various applications, considering the way that a beat lock is significantly more unobtrusive than a flip-flop.

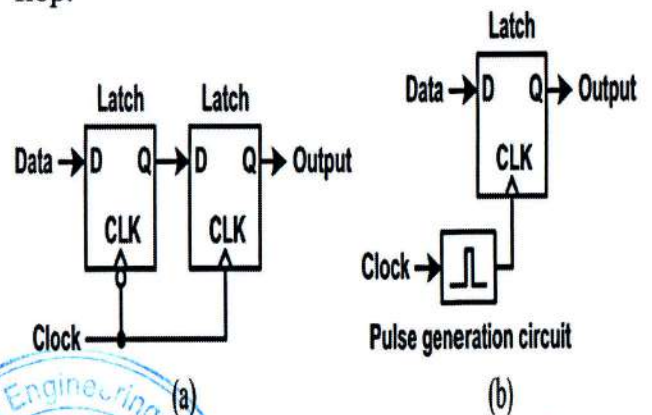


Figure 1: (a) Master-slave flip-flop. (b) Pulsed latch.



# WSNs Based communication System in Industrial Automation Using IoT

Ms. AMREEN SULTANA<sup>\*1</sup>, Dr. K. RAVINDER<sup>\*2</sup>, Dr. MOHAMMAD ILIYAS<sup>\*3</sup>

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**Abstract :** The undertaking proposes a productive usage for IoT (Internet of Things) utilized for checking and controlling the INDUSTRIAL applications using the World Wide Web. The modern computerization framework utilizes convenient gadgets as a UI. They can speak with the INDUSTRIAL mechanization network through an Internet passage, by methods for low-force correspondence conventions like Zigbee, Wi-Fi, and so on This undertaking targets controlling INDUSTRIAL machines through Smartphone utilizing Wi-Fi as correspondence convention and raspberry pi as worker framework. The client here will move straightforwardly with the framework through an online interface over the web, though INDUSTRIAL machines like lights, fan, and entryway lock are distantly controlled through a simple site. An additional element that improves the feature of security from chimney mishaps is its capacity of sleuthing the smoke all together that inside the function of any chimney, relates a cautioning message, and a picture is shipped off Smartphone. The worker will be interfaced with transfer equipment circuits that control the apparatuses running at INDUSTRIAL. The correspondence with the worker permits the client to choose a suitable gadget. The correspondence with the worker allows the client to choose the worthy gadget. The worker speaks with the relating transfers. On the off chance that the web association is down or the worker isn't up, the installed framework board actually will oversee and work the apparatuses locally. By this, we give a climbable and cost viable INDUSTRIAL Automation framework.

more serious requirement for dwelling place limits. Present-day computerization is the

## Introduction

Beginning late, human's work and life are ceaselessly close with the speedy improvement in the movement of correspondences and data advancement. The general populace has changed an individual's lifestyle comparatively as attempted the standard living strategy furthermore want for normal comforts keeps raising step by step that individuals have a

Utilization of control frameworks that handles various cycles and mechanical congregations in the industry to supersede human endeavors.

The motivation driving mechanization was to build benefits and to diminish the cost related to human executives. These days, the purpose of a combination of mechanization has moved to develop quality and adaptability in a hoarding cycle. Mechanical



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# WSNs Based communication System in Industrial Automation Using IoT

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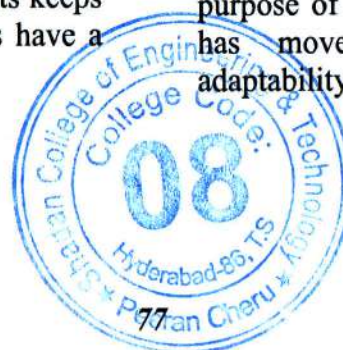
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## HIGH SPEED DYNAMIC SHIFT REGISTER FOR CONVOLUTION ENCODING AND VITERBI DECODING

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Dr. Farha Anjum, *Professor, Dept. of ECE, Siddhartha Institute of Engineering and Technology, Hyderabad.*

Mohammad Javeed, *Assistant Professor, Sree Dattha Institute of Engineering and Science, Hyderabad, India.*

### Abstract:

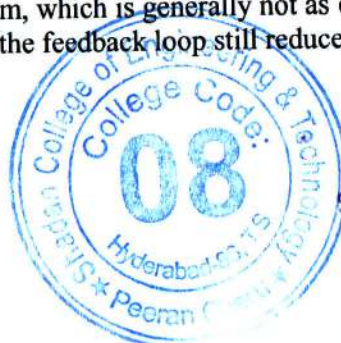
*The Convolution Encoder and viterbi decryption is displayed in this paper, which will be useful for high-speed applications. While encoding and decrypting bits, bits may need to be moved either left or right. Increase timing and complexity as we perform the variable action with more bits. To overcome this we suggest the dynamic transformation function of convolution encoding and viterbi decoding. The proposed shift register shifts four bits at a time. Execution is for the code rate of 1/2, the length of the constraint 9 and the implementation of the viterbi algorithm uses the Hamming distance instead of the Euclidean distance. Using the Hamming distance reduces the complexity of the system. The proposed architecture reduces energy consumption by approximately 51% when compares with the normal shift register. The code is written in verilog HDL and synthesized in Xilinx ISE tool.*

**Keywords:** *Shift register, Convolution encoder, Viterbi decoder, hamming distance, Euclidean distance, multi bit flip flop.*

### I. Introduction:

Using Convolution coding with viterbi decoding can significantly improve the performance of the communication system [1]. Viterbi's algorithm, which widely uses decryption algorithms, is optimized, but its complexity in both the number of accounts and memory requirements increases exponentially with the length of the code reduction. Therefore, when symbols with longer constraints are needed to achieve a low probability of error, the decoding of algorithms whose complexity does not depend on  $k$  becomes attractive [2]. Several more paths, introducing the first decryption algorithms, such as the M [3] algorithm, have suggested Simon's algorithm for alternatives to the Viterbi algorithm[4]. Unfortunately, with these algorithms, if the right path is lost, its recovery is very difficult, leading to very long error incidents. Distortion is usually contained by organizing data into frames or blocks with a known startup state or using some special recovery charts[5]. In the proposed design we suggest changing the registers that moves 4 bits using multiple bit flip flops. When the convolution encoding process is done for the length of the constraint 9, the bit movement is necessary. When you move one bit of it, it takes time for the coding process. Here we suggest a coding solution that effectively reduces energy consumption by 51%. The proposed design uses the Hamming distance instead of the euclidean distance to avoid complexity.

General solutions for the design of low-power vd set-top boxes have been studied by current work[6]. VD power reduction can be achieved by reducing the number of states or by overstating the width voltage . More than expanding the supply voltage usually has in mind the whole system that includes VD, so we do not focus on our research. In practice the reduced Sate sequence detection system (RSSD) is more common than the M algorithm, which is generally not as effective as the M algorithm [7] [8]. But ever looking for the perfect prime in the feedback loop still reduces the speed of decryption.



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## RASPBERRY PI BASED SMART DRIP IRRIGATION SYSTEM

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**Abstract** : This endeavor proposes an arrangement for plant water framework motorization structure using arranged to-use, adroit, and energy capable devices involving raspberry pi, Arduino microcontrollers, Zigbee modules, and hand-off sheets. The use of these parts achieves as a rule clever, adaptable, and generous utilization of the system. The requests from the customer are set up at raspberry pi using the web interface. Arduino micro controllers are used to get them on/off requests from the Rasperry pi using the Zigbee show. Star Zigbee geology fills in as the spine for the correspondence between raspberry pi and end devices. Rasperry pi acts as a central coordinator and end contraptions go probably as various switches. Insignificant exertion and energy successful stream water framework structure fill in as a proof of thought. The arrangement can be used in enormous agribusiness fields similarly as in little gardens by methods for the web. The use of clamminess sensors and solenoid valves form a splendid stream water framework system.

### Introduction

At the momentum time, the farmers have been using water framework procedure in India through the manual control in which the farmers immerse the land sometimes. This cycle from time to time consumes more water. Modified water framework arranging dependably has exhibited to be significant in water use viability concerning manual water framework subject to coordinate soil water assessments. Water arrangement of plants is typically an especially dreary activity that should be done in a reasonable proportion of time; it requires a great deal of HR. All the methods were executed by individuals for the most part. Nowadays, a couple of systems use advancement to diminish the number of workers and to diminish the time expected to water the plants. With such systems, the control is extraordinarily

limited and a critical number of the resources are so far wasted. Water is one of these resources which is used irrationally. Mass water framework is the procedure that is used to water the plant. This system tends to colossal adversities since the proportion of water given outperforms the plants' prerequisites. The bounty water gets delivered by the openings of the pots, or it saturates through the earth in the fields. Despite the plenitude cost of water, work is getting progressively exorbitant.

### II Project Introduction

#### 2.1 AIM

The essential purpose of this endeavor is an arrangement for plant water framework robotization structure using arranged to-use, functional, and energy beneficial devices including raspberry pi, Arduino microcontrollers, Zigbee modules, and hand-off sheets.



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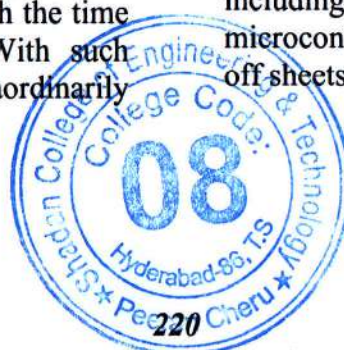
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## DEVELOPMENT FOREST FIRE DETECTION AND ALARMING SYSTEM USING IOT

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**Abstract :** Because of advances in innovation, the quantity of debacles has seen an increment due to over abuse. Climate ought to be ensured. In this period, innovation can be adequately used to forestall or expect the catastrophic event heretofore. An occasion of characteristic significance is timberland fires since they pulverize the majority of the tree cover and jeopardize natural life. This paper characterizes the utilization of an IoT gadget to recognize a wood fire and react before it makes enormous pulverization common property. The project has been intended to identify the fire as right on time as could be expected under the circumstances so it can shield itself from the fire as well. In this proposed model, the installed frameworks have been utilized in a way with the end goal that they shield themselves from any damage and are shortcoming evidence.

2014 fire at Vastmanland killed 2 individuals and genuinely harmed 20.

### Introduction

A woodland fire spreads wildly until it is halted. There have been occasions where the entire tree cover was wrecked by the backwoods fires. They happen normally and misleadingly. Their normal event is because of lightning which touches off the dry wood or dry leaves and spreads the fire. Their counterfeit or synthetic event is because of cigarette butts, outdoors, and flames for different purposes.

In Uttara hand, the May 2016 fire harmed 3500 hectares of land and guaranteed the lives of seven individuals. The entire region was totally immersed in the fire and there was no tree coverlet. In the 2015 California fire, 8700 flames consumed an all-out region of 893000 sections of land. The August

Every one of these occurrences is confirmations that wood fires are exceptionally perilous and have should be forestalled as ahead of schedule as could reasonably be expected. Furthermore, a large portion of the local groups of fire-fighters around the globe don't have a robotized arrangement of fire recognition and notice. There will be an exercise in futility as the local group of fire-fighters needs to initially discover the territory and afterward go there for a reaction. On the off chance that a mechanized framework is given, at that point it will promptly detect the fire and caution the specialists about the area of the fire. This truth be told, will be successful in forestalling the fire since the reaction will be prompt and there won't be any harm to property.



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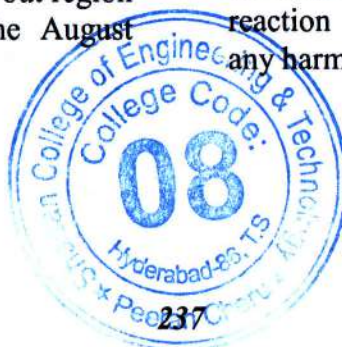
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## SMART HEALTHCARE PARAMETERS MONITORING SYSTEM USING IOT

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**Abstract :** The clinical organizations address one of the top difficulties that each nation is going toward today. Despite the way that the clinical thought industry is put energetically in IT, yet the guaranteed improvement in getting security and adequacy has not been perceived up to the standards even today's affiliations truly depend upon paper clinical records and hand return notes to illuminate hand picks. Modernized data is siloed among divisions and applications. The IoT can pass on different inclinations to clinical organizations using sensors, insightful supplies, and so forth The Internet of Things (IoT) is another idea that licenses clients to relate different sensors and awesome gadgets to collect predictable information from the air. Regardless, it has been seen that an absolute stage is up to this point missing in the e-Health and m-Health models to utilize PDA sensors to recognize and bestow imperative information identified with a patient's success. In this undertaking our duty is twofold. First thing, we basically overview the current structure, which examines the appropriate approaches to manage send IoT in the field of clinical and sharp clinical thought. In like manner, we propose another semantic model for patients' e-Health. The proposed model named 'k-Healthcare' utilizes 4 layers the sensor layer, the affiliation layer, the Internet layer, and the association layer. All layers help out one another successfully and competently to give a stage to get to patients' thriving information utilizing advanced cells.

### Introduction

The Internet of things is the inter-connection of devices, apps, sensors and network connectivity that enhances these entities to gather and exchange data. The distinguishing characteristic of Internet of Things in the healthcare system is the constant monitoring a patient through checking various parameters and also infers a good result from the history of such constant monitoring. Many such devices equipped with medical sensors are present in the ICUs now-a-days. There could be instances where the doctor couldn't be alerted in time when there is an emergency, despite of 24 hours of monitoring. Also there might be hurdles in sharing the data and information with the specialist doctors

and the concerned family members and relatives. The technology that enhances these features is already available but is not accessible and affordable by most of the people in developing countries such as India. Hence these solutions to these problems can be just a simple extension to the current devices which don't have these facilities. This paper demonstrates a Remote Health Monitoring System controlled by Raspberry pi. Raspberry Pi is a small payment card-sized single-board microcontroller made to enhance the basic computer science education in colleges and developing nations. In this paper, a system is designed to continuously monitor the vital parameters such as heart rate, blood pressure and body temperature. The information is stored on a cloud server database and can be displayed through an online website or mobile application by authorized personnel only. The idea might not be very new, but



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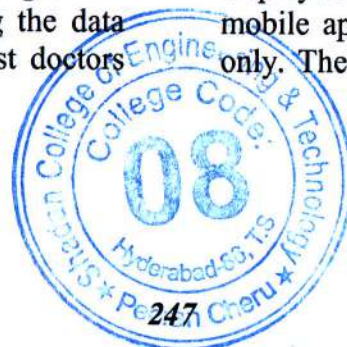
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## WSNS BASED PARKING SPACE MANAGEMENT SYSTEM

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**Abstract :** In the advancement of traffic the board frameworks, a keen leaving framework was made to lessen the expense of recruiting individuals and for ideal utilization of assets for vehicle leave proprietors. Right now, the regular strategy for finding a parking spot is manual where the driver generally finds a space in the road through karma and experience. This cycle requires some investment and exertion and may prompt the most pessimistic scenario of neglecting to discover any parking spot if the driver is driving in a city with high vehicle thickness. The option is to discover a predefined vehicle leave with a high limit.

The base paper actualizes a framework model with remote access in an open-source physical registering stage dependent on Arduino with IR sensor innovation utilizing a cell phone that gives the correspondence and UI for both the control framework and the vehicles to confirm the plausibility of discovering free parking spot utilizing the web and cloud innovation. Keywords:- Raspberry pi, IR sensors, Zigbee correspondence

### I. Introduction

Since individuals and vehicles are sharing the road, crosswalk expands reasonability of utilizing the road in the really thought region. Regardless, as individuals develop, this brings progressively ceaseless setbacks and dynamically genuine wounds, and therefore, nationals are trying to reduce these disasters by making types of progress and genuine supports. Such activities pull down the complete number of lethal disasters yet shockingly, the number of individuals by walking fatalities doesn't decrease for quite a while. To be explicit, this misfortune doesn't have a close to reserve considers to others. An appraisal around 2014 in the USA displays fatalities in 78% happened in metropolitan, 71% happened at non-crossing centers and 72% happened thoughtlessly. Through this

evaluation, individuals by walking fatalities are deducing an overwhelmingly populated region makes continuously gave make a disaster and an average assertion makes less opportunity to perceive a bystander or a vehicle. As the Wireless Sensor Networks have precisely developed even more rapidly and even more capably, they have become the key hotspot for the progression of IoT. They find application in for all intents and purposes all domains including insightful organization, sharp transportation systems, splendid home, keen crisis facilities, and so on The achievement of the above lead to the smart city improvement as referred to by our Indian Prime Minister. The chance of the web of things (IoT) was made in relating to WSNs. The term web of things was brought about by Kevin Ashton and insinuates exceptionally conspicuous articles and their virtual depictions in a "web-like" structure.



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## DESIGN AND DEVELOPMENT OF THE INSIGHTFUL CROSSING POINT FRAMEWORK UTILIZING IOT

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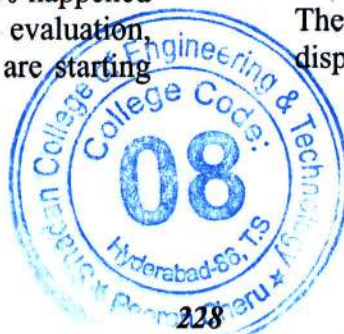
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### Introduction

Since individuals and vehicle are sharing the road, crosswalk develops reasonableness of utilizing the road in an inconceivably thought region. Regardless, as the individuals make, this brings progressively unending challenges and industriously authentic wounds, and thusly, nationals are endeavoring to decrease these fiascoes by acquiring levels of ground and genuine support. Such activities pull-down undeniably the number of destructive incidents yet amazingly, the quantity of a person by walking fatalities doesn't diminish for quite a while. To be unequivocal, this difficulty to others. An appraisal around 2014 in the USA shows fatalities in 78% happened in metropolitan, 71% happened at non-union concentrations and 72% happened absurdly. Through this evaluation, individual walking fatalities are starting

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The information henceforth assembled is dispatched off the parking space of the



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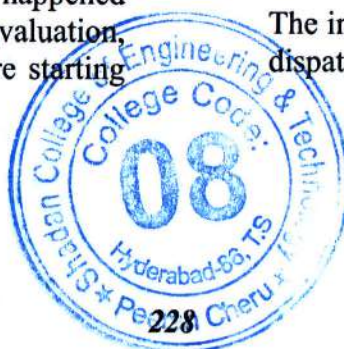
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## WSNS BASED PARKING SPACE MANAGEMENT SYSTEM

Mr. MOHAMMAD SAMAD<sup>\*1</sup>, Dr. G. RAVI KUMAR<sup>\*2</sup>, Dr. MOHAMMAD ILIYAS<sup>\*3</sup>

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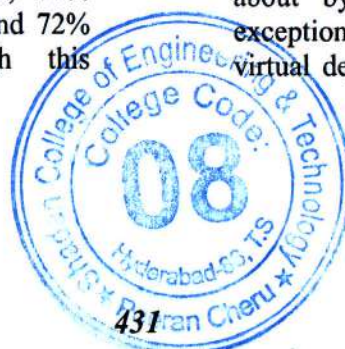
**Abstract :** In the advancement of traffic the board frameworks, a keen leaving framework was made to lessen the expense of recruiting individuals and for ideal utilization of assets for vehicle leave proprietors. Right now, the regular strategy for finding a parking spot is manual where the driver generally finds a space in the road through karma and experience. This cycle requires some investment and exertion and may prompt the most pessimistic scenario of neglecting to discover any parking spot if the driver is driving in a city with high vehicle thickness. The option is to discover a predefined vehicle leave with a high limit.

The base paper actualizes a framework model with remote access in an open-source physical registering stage dependent on Arduino with IR sensor innovation utilizing a cell phone that gives the correspondence and UI for both the control framework and the vehicles to confirm the plausibility of discovering free parking spot utilizing the web and cloud innovation. Keywords:- Raspberry pi, IR sensors, Zigbee correspondence

### I. Introduction

Since individuals and vehicles are sharing the road, crosswalk expands reasonability of utilizing the road in the really thought region. Regardless, as individuals develop, this brings progressively ceaseless setbacks and dynamically genuine wounds, and therefore, nationals are trying to reduce these disasters by making types of progress and genuine supports. Such activities pull down the complete number of lethal disasters yet shockingly, the number of individuals by walking fatalities doesn't decrease for quite a while. To be explicit, this misfortune doesn't have a close to reserve considers to others. An appraisal around 2014 in the USA displays fatalities in 78% happened in metropolitan, 71% happened at non-crossing centers and 72% happened thoughtlessly. Through this

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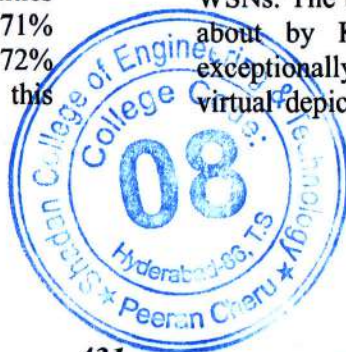
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## WSNs Based communication System in Industrial Automation Using IoT

Ms. AMREEN SULTANA<sup>\*1</sup>, Dr. K. RAVINDER<sup>\*2</sup>, Dr. MOHAMMAD ILIYAS<sup>\*3</sup>

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**Abstract :** The undertaking proposes a productive usage for IoT (Internet of Things) utilized for checking and controlling the INDUSTRIAL applications using the World Wide Web. The modern computerization framework utilizes convenient gadgets as a UI. They can speak with the INDUSTRIAL mechanization network through an Internet passage, by methods for low-force correspondence conventions like Zigbee, Wi-Fi, and so on This undertaking targets controlling INDUSTRIAL machines through Smartphone utilizing Wi-Fi as correspondence convention and raspberry pi as worker framework. The client here will move straightforwardly with the framework through an online interface over the web, though INDUSTRIAL machines like lights, fan, and entryway lock are distantly controlled through a simple site. An additional element that improves the feature of security from chimney mishaps is its capacity of sleuthing the smoke all together that inside the function of any chimney, relates a cautioning message, and a picture is shipped off Smartphone. The worker will be interfaced with transfer equipment circuits that control the apparatuses running at INDUSTRIAL. The correspondence with the worker permits the client to choose a suitable gadget. The correspondence with the worker allows the client to choose the worthy gadget. The worker speaks with the relating transfers. On the off chance that the web association is down or the worker isn't up, the installed framework board actually will oversee and work the apparatuses locally. By this, we give a climbable and cost viable INDUSTRIAL Automation framework.

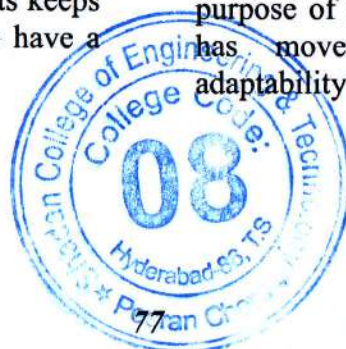
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### Introduction

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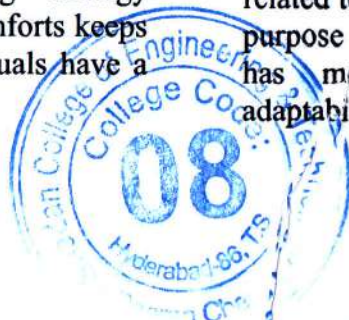
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## RASPBERRY PI BASED SMART DRIP IRRIGATION SYSTEM

Mr. MD FURKHAN AHMED <sup>\*1</sup>, DR. SHAIK SAIDULU <sup>\*2</sup>, Dr. MOHAMMAD ILIYAS<sup>\*3</sup>

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**Abstract** : This endeavor proposes an arrangement for plant water framework motorization structure using arranged to-use, adroit, and energy capable devices involving raspberry pi, Arduino microcontrollers, Zigbee modules, and hand-off sheets. The use of these parts achieves as a rule clever, adaptable, and generous utilization of the system. The requests from the customer are set up at raspberry pi using the web interface. Arduino micro controllers are used to get them on/off requests from the Rasperry pi using the Zigbee show. Star Zigbee geology fills in as the spine for the correspondence between raspberry pi and end devices. Raspberry pi acts as a central coordinator and end contraptions go probably as various switches. Insignificant exertion and energy successful stream water framework structure fill in as a proof of thought. The arrangement can be used in enormous agribusiness fields similarly as in little gardens by methods for the web. The use of clamminess sensors and solenoid valves form a splendid stream water framework system.

### Introduction

At the momentum time, the farmers have been using water framework procedure in India through the manual control in which the farmers immerse the land sometimes. This cycle from time to time consumes more water. Modified water framework arranging dependably has exhibited to be significant in water use viability concerning manual water framework subject to coordinate soil water assessments. Water arrangement of plants is typically an especially dreary activity that should be done in a reasonable proportion of time; it requires a great deal of HR. All the methods were executed by individuals for the most part. Nowadays, a couple of systems use advancement to diminish the number of workers and to diminish the time expected to water the plants. With such systems, the control is extraordinarily

limited and a critical number of the resources are so far wasted. Water is one of these resources which is used irrationally. Mass water framework is the procedure that is used to water the plant. This system tends to colossal adversities since the proportion of water given outperforms the plants' prerequisites. The bounty water gets delivered by the openings of the pots, or it saturates through the earth in the fields. Despite the plenitude cost of water, work is getting progressively exorbitant.

### II Project Introduction

#### 2.1 AIM

The essential purpose of this endeavor is an arrangement for plant water framework robotization structure using arranged to-use, functional, and energy beneficial devices including raspberry pi, Arduino microcontrollers, Zigbee modules, and hand-off sheets.



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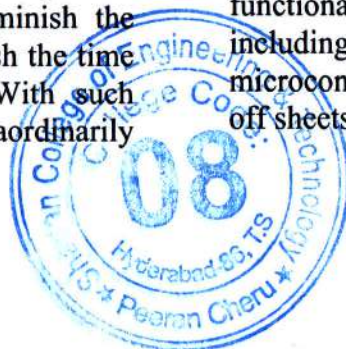
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## DESIGN AND DEVELOPMENT OF THE INSIGHTFUL CROSSING POINT FRAMEWORK UTILIZING IOT

Mr. MOHAMMED ABDUL ZAKIRUDDIN <sup>\*1</sup>, SYED AZEEM HUSSAIN <sup>\*2</sup>, Dr. MOHAMMAD ILIYAS <sup>\*3</sup>

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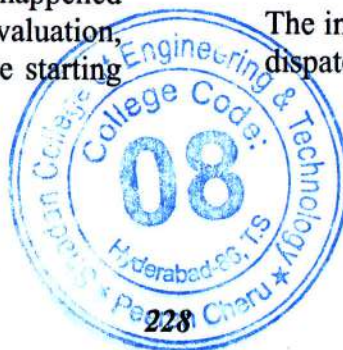
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## DEVELOPMENT FOREST FIRE DETECTION AND ALARMING SYSTEM USING IOT

Mr. MOHAMMED JUNAID AHMED<sup>\*1</sup>, Dr. G RAVI KUMAR<sup>\*2</sup>, Dr. MOHAMMAD ILIYAS<sup>\*3</sup>

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**Abstract :** Because of advances in innovation, the quantity of debacles has seen an increment due to over abuse. Climate ought to be ensured. In this period, innovation can be adequately used to forestall or expect the catastrophic event heretofore. An occasion of characteristic significance is timberland fires since they pulverize the majority of the tree cover and jeopardize natural life. This paper characterizes the utilization of an IoT gadget to recognize a wood fire and react before it makes enormous pulverization common property. The project has been intended to identify the fire as right on time as could be expected under the circumstances so it can shield itself from the fire as well. In this proposed model, the installed frameworks have been utilized in a way with the end goal that they shield themselves from any damage and are shortcoming evidence.

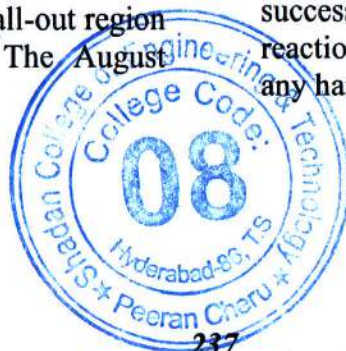
2014 fire at Vastmanland killed 2 individuals and genuinely harmed 20.


### Introduction

A woodland fire spreads wildly until it is halted. There have been occasions where the entire tree cover was wrecked by the backwoods fires. They happen normally and misleadingly. Their normal event is because of lightning which touches off the dry wood or dry leaves and spreads the fire. Their counterfeit or synthetic event is because of cigarette butts, outdoors, and flames for different purposes.

In Uttara hand, the May 2016 fire harmed 3500 hectares of land and guaranteed the lives of seven individuals. The entire region was totally immersed in the fire and there was no tree coverlet. In the 2015 California fire, 8700 flames consumed an all-out region of 893000 sections of land. The August

Every one of these occurrences is confirmations that wood fires are exceptionally perilous and have should be forestalled as ahead of schedule as could reasonably be expected. Furthermore, a large portion of the local groups of fire-fighters around the globe don't have a robotized arrangement of fire recognition and notice. There will be an exercise in futility as the local group of fire-fighters needs to initially discover the territory and afterward go there for a reaction. On the off chance that a mechanized framework is given, at that point it will promptly detect the fire and caution the specialists about the area of the fire. This truth be told, will be successful in forestalling the fire since the reaction will be prompt and there won't be any harm to property.



  
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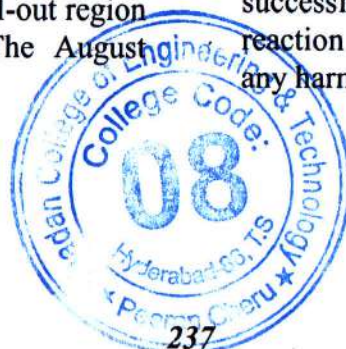
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## SMART HEALTHCARE PARAMETERS MONITORING SYSTEM USING IOT

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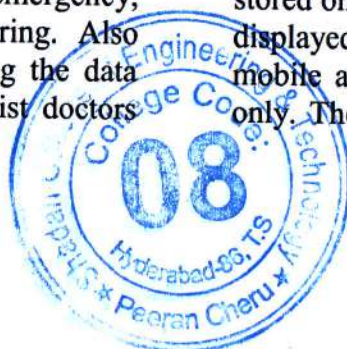
<sup>\*3</sup> Professor & HOD, Dept. of ECE, Shadan College of Engineering and Technology

**Abstract :** The clinical organizations address one of the top difficulties that each nation is going toward today. Despite the way that the clinical thought industry is put energetically in IT, yet the guaranteed improvement in getting security and adequacy has not been perceived up to the standards even today's affiliations truly depend upon paper clinical records and hand return notes to illuminate hand picks. Modernized data is siloed among divisions and applications. The IoT can pass on different inclinations to clinical organizations using sensors, insightful supplies, and so forth The Internet of Things (IoT) is another idea that licenses clients to relate different sensors and awesome gadgets to collect predictable information from the air. Regardless, it has been seen that an absolute stage is up to this point missing in the e-Health and m-Health models to utilize PDA sensors to recognize and bestow imperative information identified with a patient's success. In this undertaking our duty is twofold. First thing, we basically overview the current structure, which examines the appropriate approaches to manage send IoT in the field of clinical and sharp clinical thought. In like manner, we propose another semantic model for patients' e-Health. The proposed model named 'k-Healthcare' utilizes 4 layers the sensor layer, the affiliation layer, the Internet layer, and the association layer. All layers help out one another successfully and competently to give a stage to get to patients' thriving information utilizing advanced cells.

### Introduction

The Internet of things is the inter-connection of devices, apps, sensors and network connectivity that enhances these entities to gather and exchange data. The distinguishing characteristic of Internet of Things in the healthcare system is the constant monitoring a patient through checking various parameters and also infers a good result from the history of such constant monitoring. Many such devices equipped with medical sensors are present in the ICUs now-a-days. There could be instances where the doctor couldn't be alerted in time when there is an emergency, despite of 24 hours of monitoring. Also there might be hurdles in sharing the data and information with the specialist doctors

and the concerned family members and relatives. The technology that enhances these features is already available but is not accessible and affordable by most of the people in developing countries such as India. Hence these solutions to these problems can be just a simple extension to the current devices which don't have these facilities. This paper demonstrates a Remote Health Monitoring System controlled by Raspberry pi. Raspberry Pi is a small payment card-sized single-board microcontroller made to enhance the basic computer science education in colleges and developing nations. In this paper, a system is designed to continuously monitor the vital parameters such as heart rate, blood pressure and body temperature. The information is stored on a cloud server database and can be displayed through an online website or mobile application by authorized personnel only. The idea might not be very new, but



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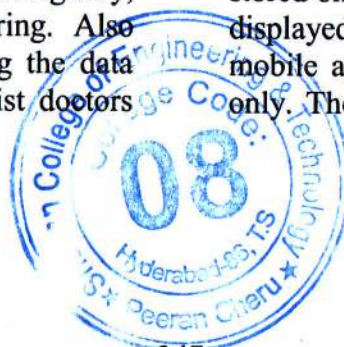
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# Processing of human emotions using cost effective EEG Sensor and machine learning approach

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**Abstract**- Emotions are different biological states brought on by neurophysiological changes associated with the nervous system which are affected and results in thoughts, feelings, behavioral responses, and a degree of pleasure or displeasure. These emotions play a vital role in understanding the human response towards any means of action they experience. The system uses an EEG headband device made out of IoT and various machine learning algorithms to understand the human's emotion of any incident they undergo. In this paper, we propose a method to detect and recognize the emotional changes in a human who is exposed to various images.

**Keywords** – EEG; sensor applications; emotion detection

## I. INTRODUCTION

Today in the digital era where every job gets completed by a simple touch of our fingers or with our voice. The Internet of Things (IoT) plays a major role in all of the devices that we use for simplifying tasks and jobs. The IoT ecosystem can be made up of smart devices that are web-enabled and may make use of sensors, processors, embedded systems, and communication hardware. The IoT system collects the data, sends the data, and acts using the data they acquire from their environments using the sensors. The IoT devices may share the data collected through the sensor. The communication is done over Bluetooth or Wi-Fi or by connecting to an IoT gateway or by other edge devices where data is either sent to the local machine or the cloud. Sometimes, the devices inter-communicate within the ecosystem and act on the instruction received. These devices do major of the work without human intervention, though people interaction is needed with the devices to set them up, to give them instructions, or access the data. IoT combined with the use of artificial intelligence (AI) and machine learning can aid for making data collection and processing easier and more dynamic.

The human brain is made up of billions of neurons that form the base of the nervous system. These neurons are responsible for the conduction and execution of the nerve signals. These neurons are interconnected deeply by synapses

and act as a gateway for exhibiting or inhibiting any activity. A Neuron generates a very minute electrical field when it is being used. But millions of neurons are used to execute any work. This also makes the electrical field much amplified to an extent where it can be measured through the skull, bones, and tissues themselves. The amplified electric field can be recorded and observed by using an Electroencephalogram (EEG) device. This makes it easier to record them and analyze them. This electric field is generally referred to be Brain Waves.

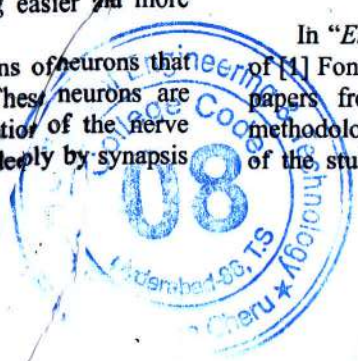
The 10-20 system is the internationally recognized method for describing and locating the electrodes. By this system of locating the electrodes are in the following points –Prefrontal (Fp), Frontal (F), Temporal (T), Parietal (P), Occipital (O), and the Central (C). The number from one to ten refers to the location on which side of the Brain. The even-numbered electrode (2, 4, 6 & 8) refers to the electrode placed on the right-hand side of the head. The odd-numbered electrodes (1, 3, 5 & 7) refer to the electrodes placed on the left-hand side of the head.

In our experiment, we make use of an IoT device to sense and capture the Brain waves that are generated from our brain when we make use of our mind. These captured signals help us to understand how the mind was functioning then. The signals are processed and fed into machine learning algorithms to predict the emotion of the person while undergoing the experiment.

The contribution of this article is that the present study proposed a novel cost-effective EEG sensor for capturing, monitoring, and analyzing emotional changes in humans. Several other options like fMRI (Functional magnetic resonance imaging) are also available for measuring emotional changes, but these options are very expensive.

## II. RELATED WORK

In "Emotions Recognition Using EEG Signals", authors of [1] Fonseca performed an analytic experiment on research papers from 2009 to 2016 to find the best practices, methodology, and mistakes that had to be avoided. At the end of the study, they concluded by formulating six important



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# Lifetime Enhancement Based on Energy and Buffer Residual Status of Intermediate Node in Wireless Sensor Networks

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- M. S. S. Rukmini (1)
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## Abstract

Wireless sensor networks (WSNs) are comprised of spatially distributed sensing and detecting nodes attached to the sensors in the network to maintain different states of the deployed area. These nodes are equipped with constrained resource batteries. Due to its distributed nature, WSNs offer ease of access to small detecting nodes to sense the surrounding information. WSNs use the multi-hop communication technique to transmit the data to the node which is far away from its communication range through the neighbor nodes. Various WSN applications are, forest driving, underwater, and sometimes mountain-based, so it is not possible to recharge or reinstate these batteries throughout the assignment. Hence, efficient energy utilization is a significant challenge in these types of networks, as the node energy, as well as the buffer, is constrained. Thus, these available resources of the node must be utilized efficiently for various basic functions as data sensing, processing the sensed data, and transmitting processed information. So, the direction-finding protocols are one of the key considerable factors to reduce the consumption of energy and lifetime elaboration of the network. In WSNs Cluster-based routing is a prevalent method to achieve network performance with energy efficiency to enhance the network lifetime. Thus, this work gives the development of routing protocol with efficient energy to elaborate systems lifetime by selecting a proper route by considering the energy and buffer remaining status (EBRS) of the intermediate node.

## Keywords

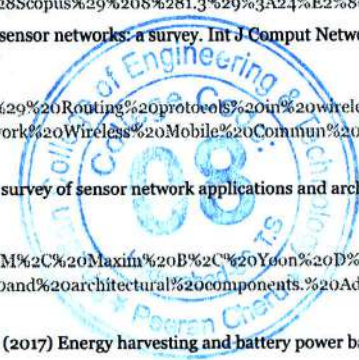
Wireless sensor networks Network lifetime Node energy Node buffer Energy efficiency Routing protocol Remaining status

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# Performance improvement in wireless sensor networks by removing the packet drop from the node buffer

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## Abstract

In Wireless Sensor Networks (WSNs) typed applications, the node buffer plays a vital role to store the processed data before transmitting it further to the base node through neighbor nodule. Nowadays, in Multi-Application Wireless Sensor Networks (MAWSNs) scenario, to improve network performance of the node buffer has to be maintained or efficiently balanced. Because, for implementing various applications, at the same time in MAWSNs, the processing, transmitting capability of the node should be enhanced and the node storage capacity (Buffer) should be maintained. Since, if the node buffer exhausted then automatically it drops the data packet and the data will be lost and hence performance degradation will occur in the network. It will also affect the network lifetime. Hence, this paper implements a mechanism to enhance the node buffer for improving network performance. The work is implemented on Network Simulator i.e., NS2 version 2.34/2.35. Our work outperforms in comparison with the existing work and improves network performance.

 Previous


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 FEEDBACK



# Lifetime and Performance Enhancement in WSN by Energy-Buffer Residual Status of Nodes and the Multiple Mobile Sink

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## Abstract:

Wireless sensor networks (WSNs) are consisting of spatially scattered independent nodes with sensors to sense and keep the ecological states. In WSNs, the nodes are outfitted with constrained sources of energy and buffer, hence, energy efficiency is an important challenge. Therefore, efficient techniques in routing based on energy and buffer are essentially required in WSNs to provide the network lifetime (NL) enhancement with less energy utilization. To enhance the NL and network performance in WSNs energy-efficient direction-finding practice is tremendously needed with multiple sink. Hence, by using clustering and energy balancing process with the help of multiple sink it can be achieved effortlessly in WSN. Furthermore, for those networks having constrained energy and storage capacities, well-organized power consumption is a significant issue to sustain, expand and enhance the network lifetime (NL). For that purpose, we are using data aggregation technique in an efficient energy approach to collect and aggregate data, so that network lifetime will enhanced. These all terms can be dominated with energy-efficiency routing techniques. Since, it is one of the basic sources for organizing the total energy of the wireless network. Hence, cluster-based routing in with energy-balancing is proposed for achieving the network performance, lifetime as well as energy-efficiency in WSN. Furthermore, by making multiple movable sink the network performance and network lifetime can be further enhanced for the outsized WSNs. Hence, we proposed a routing protocol "Energy-Buffer Residual Status (EBRS) with Multiple Mobile Sink" to enhance the lifetime and performance of the network in WSN. The outcomes show that our protocol outperforms to improve the networks performance and prevent the creation of intermediate bottleneck node in comparison with the existing routing protocols.

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**Keywords:** Wireless Sensor Networks, Network Lifetime, Network Performance, Sensor Node, Bottleneck Node, Node Energy, Node Buffer, Node Lifetime, Energy Efficiency, Cluster Head, Routing, Mobile sink, Residual Status.

## I. INTRODUCTION

In WSNs the sensed data transmitted to the external world all the way through the sink node [1]. In wireless networks the sink acts as an intermediary node between basic nodes and the external world. Furthermore, the communication

process in WSN is done either by single- or multi-hop technique based on the distance between the sink and the sensor nodes [2]. Furthermore, the location of the sink node is an important aspect to evaluate and enhance the network performance and lifetime [3]. The sensor nodes might expire



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## ABSTRACT

The use of low power, high sensitivity, ultra-regenerative (SR) receivers for WBAN is recommended in this document. To ensure high sensitivity while maintaining low power consumption, a two-stage cyclic cooling controller with automatic negative (-Gm) contact controller is designed to adjust the SRO bias current to double the input data rate. To reduce power consumption without affecting loop boost, a new SRO architecture has been introduced across platforms using dynamic threshold control techniques, larger adaptive bias, and gm optimization. The proposed 2.4 GHz centre frequency super regenerative receiver is implemented in a 180 nm CMOS technology using a clock optimization scheme.  
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## 1. Introduction

This chapter provides an overview of wireless network development with a focus on Wireless Sensor Networks (WSN). Motivation for research work was developed, after which the literature was reviewed and dissertations compiled. In an independent power environment, to ensure low power consumption of wireless receivers, high sensitivity becomes a serious problem [1,2]. Due to the low complexity of Super Regenerative (SR) receivers, the combination of ultra-regeneration principles and CSR modulation allows for an economical design and low power consumption. To solve the current problem in current SR receiver design and simplify circuit architecture, we used a Q-switched LC oscillator to provide high selectivity and increase sensitivity Fig 1 Fig 2 Fig 3 Table 1.

### 1.1. Growth of wireless communication networks

Wireless communication networks have experienced swift progress since 1970s and associate innovative technologies have credited to its evolution and complexity. The first generation networks were deployed in 1980s, which are based on Frequency Division Multiple Access (FDMA) and analog Frequency Modulation (FM) technology. The first analog cellular system namely, the Nippon Telephone and Telegraph (NTT) system started its operations in 1979. The Nordic Mobile Telephone (NMT)

announced by Ericsson Radio Systems and the Advanced Mobile Phone Service (AMPS) introduced by AT&T, became functional from 1981 and 1983 respectively. In the early 1980s, several first generation analog systems like ETACS, TACS, C-450, NMT 450, RTMS and Radio com 2000 in Europe, and NTACS / JTACS in Japan were pushed for deployment [3,4].

## 2. Proposed methodology

Logarithmic multiplication based on effective expansion such as Mahalingam and Rangantathan (2006) produces a much lower error rate than the logarithmic multiplication of Mitchell. However, the doubled architecture presented by Mahalingam and Rangantathan (2006) has some design problems. It is possible to reduce the complexity and number of hardware faults. By studying the literature, it is found that there is no definite logarithmic factor in the literature on the basis of "enhanced modulus expansion" [5,6]. An improved log multiplication architecture based on efficient decomposition must be considered when the log duplication architecture based on effective decomposition cannot provide error accuracy and instrumentation efficiency. It is recommended to make some changes to the log multiplication algorithm, based on the existing decoding of factors, to eliminate the accuracy of errors, as well as to reduce the efficiency of the equipment. Algorithms for operational and architectural decomposition have been proposed. The application of logarithmic multiplication on the basis of the most effective factor in designing the FIR filter is

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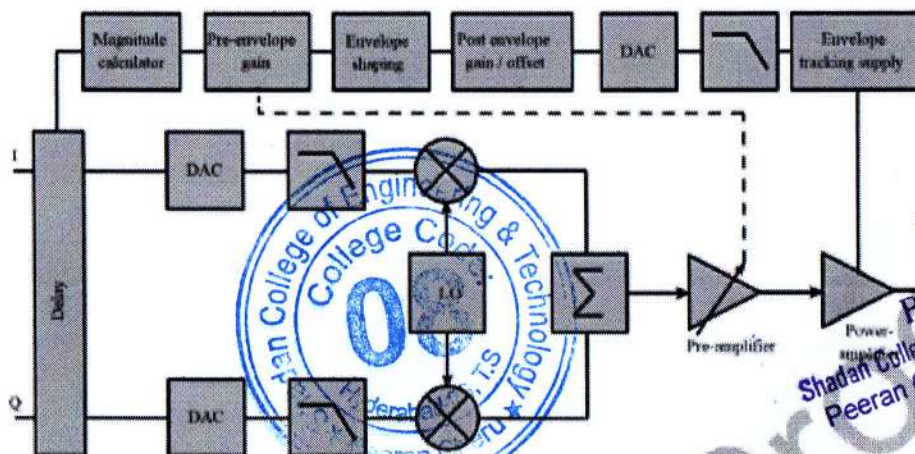


Fig. 1. Block diagram of the envelope detector tracking transmitter.

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## DESIGN & IMPLEMENTATION OF SINGLE ELECTRON TRANSISTOR (SET)

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**Abstract:** The single electron transistor is a new type of switching device that uses controlled electron tunneling to amplify current. and retains its scalability even on an atomic scale. Here, scalability means that the performance of electronic devices increases with a decrease of the device dimensions. Recent research in SET gives new ideas which are going to revolutionize the random access memory and digital data storage technologies. The goal of this paper is to discuss about the basic physics, applications of nano electronic device 'Single electron transistor [SET]' which is capable of controlling the transport of only one electron. Single-electron transistor (SET) is a key element of current research area of nanotechnology which can offer low power consumption and high operating speed. In this paper, we also focus on some basic device characteristics like 'Coulomb blockade', single electron tunneling effect & 'Coulomb staircase' on which this Single electron transistor [SET] works and the basic comparison of SET & MOSFET characteristics and also its [SET] advantages as well as disadvantages to make a clear picture about the reason behind its popularity in the field of nanoelectronics.

**Keywords:** Single-electron tunneling, Coulomb blockade, Coulomb staircase, Single electron Transistor, Quantum dot, Nanoelectronics

### 1. INTRODUCTION

In today's digital integrated circuit architectures, transistors serve as circuit switches to charge and discharge capacitors to the required logic voltage levels[1]. A transistor is a three terminal semiconductor device used to amplify and switch electronic signals and electrical power. It has been observed that the Scaling down of electronic device sizes has been the fundamental strategy for improving the performance of ultra-large-scale integrated circuits (ULSIs). Metal-oxide- semiconductor field-effect transistors (MOSFETs) have been the most prevalent electron devices for ULSI applications, and thus the scaling down of the sizes of MOSFETs [1][2] has been the basis of the development of the semiconductor industry for the last 30 years. However, in the early years of the 21st century, the scaling of CMOSFETs is entering the deep sub-50 nm regime [3]. In this deep-nanoscaled regime, fundamental limits of CMOSFETs and technological challenges with regard to the scaling of CMOSFETs are encountered [4]. On the other hand, quantum-mechanical effects are expected to be effective in these small structured devices. Therefore, in order to extend the prodigious progress of LSI performance, it is essential to introduce a new device having an operation principle that is effective in smaller dimensions and which may utilize the quantum- mechanical effects, and thus provide a new functionality beyond that attainable with CMOSFETs.

Single-electron devices [5] are promising as new nanoscaled devices because single-electron devices retain their scalability even on an atomic scale and moreover, they can control the motion of even a single electron. Therefore, if the single-electron devices are used as ULSI elements, the ULSI will have the attributes of extremely high integration and extremely low power consumption. Power consumption is roughly proportional to the electron number transferred from voltage source to the ground in logic operations. Therefore, the utilization of single electron devices in ULSIs is expected to reduce the power consumption of ULSIs. SET is said to be the tiny transistor with finest power consumption. Since the technology reaches nano size, the behavior of a nanoelectronic single electron transistor (SET) is controlled by the quantum mechanical effects.

The rest of this paper is organized as follows: Section 2 states about the SET schematic and working. Section 3 gives the description of principle of Single electron tunneling & Coulomb Blockade. Section 4 presents the I-V characteristics of single electron transistors. Section 5 presents the comparison between SET and MOSFET. Section 6 presents the comparison between SET and CMOS. Section 7 presents the applications of Single Electron Transistor. Finally, Section 8 & 9 describes the advantages & disadvantages of SET followed by conclusion.

### 2. SET SCHEMATIC AND ITS WORKING





## DESIGN & IMPLEMENTATION OF SINGLE ELECTRON TRANSISTOR (SET)

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**Abstract:** The single electron transistor is a new type of switching device that uses controlled electron tunneling to amplify current. and retains its scalability even on an atomic scale. Here, scalability means that the performance of electronic devices increases with a decrease of the device dimensions. Recent research in SET gives new ideas which are going to revolutionize the random access memory and digital data storage technologies. The goal of this paper is to discuss about the basic physics, applications of nano electronic device 'Single electron transistor [SET]' which is capable of controlling the transport of only one electron. Single-electron transistor (SET) is a key element of current research area of nanotechnology which can offer low power consumption and high operating speed. In this paper, we also focus on some basic device characteristics like 'Coulomb blockade', single electron tunneling effect & 'Coulomb staircase' on which this Single electron transistor [SET] works and the basic comparison of SET & MOSFET characteristics and also its [SET] advantages as well as disadvantages to make a clear picture about the reason behind its popularity in the field of nanoelectronics.

Keywords: Single-electron tunneling, Coulomb blockade, Coulomb staircase, Single electron Transistor, Quantum dot, Nanoelectronics

### 1. INTRODUCTION

In today's digital integrated circuit architectures, transistors serve as circuit switches to charge and discharge capacitors to the required logic voltage levels[1]. A transistor is a three terminal semiconductor device used to amplify and switch electronic signals and electrical power. It has been observed that the Scaling down of electronic device sizes has been the fundamental strategy for improving the performance of ultra-large-scale integrated circuits (ULSIs). Metal-oxide- semiconductor field-effect transistors (MOSFETs) have been the most prevalent electron devices for ULSI applications, and thus the scaling down of the sizes of MOSFETs [1][2] has been the basis of the development of the semiconductor industry for the last 30 years. However, in the early years of the 21st century, the scaling of CMOSFETs is entering the deep sub-50 nm regime [3]. In this deep-nanoscaled regime, fundamental limits of CMOSFETs and technological challenges with regard to the scaling of CMOSFETs are encountered [4]. On the other hand, quantum-mechanical effects are expected to be effective in these small structured devices. Therefore, in order to extend the prodigious progress of LSI performance, it is essential to introduce a new device having an operation principle that is effective in smaller dimensions and which may utilize the quantum- mechanical effects, and thus provide a new functionality beyond that attainable with CMOSFETs.

Single-electron devices [5] are promising as new nanoscaled devices because single-electron devices retain their scalability even on an atomic scale and moreover, they can control the motion of even a single electron. Therefore, if the single-electron devices are used as ULSI elements, the ULSI will have the attributes of extremely high integration and extremely low power consumption. Power consumption is roughly proportional to the electron number transferred from voltage source to the ground in logic operations. Therefore, the utilization of single electron devices in ULSIs is expected to reduce the power consumption of ULSIs. SET is said to be the tiny transistor with tiniest power consumption. Since the technology reaches nano size, the behavior of a nanoelectronic single electron transistor (SET) is controlled by the quantum mechanical effects.

The rest of this paper is organized as follows: Section 2 states about the SET schematic and working. Section 3 gives the description of principle of Single electron tunneling & Coulomb Blockade. Section 4 presents the I-V characteristics of single electron transistors. Section 5 presents the comparison between SET and MOSFET. Section 6 presents the comparison between SET and CMOS. Section 7 presents the applications of Single Electron Transistor. Finally, Section 8 & 9 describes the advantages & disadvantages of SET followed by conclusion.

### 2. SET SCHEMATIC AND ITS WORKING



# LOW PASS – IIR FILTER DESIGN ON POSIT NUMBERS FORMAT USING VERILOG

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**ABSTRACT:** Designing of IIR filter is one of the complex tasks and an essential Digital component for the present high precision technology of era on 120 nm Technology of today’s no Time to Market world. The augmented usage of filters is highly unstoppable and needless to mention in the ever-changing demand of Digital versatility. With the inclusion of new word format apart from Fixed Point and Floating point which can play an important role in increasing the resolution, accuracy, and Dynamic range for representation has been introduced. This new impact of a word size is Posit Numbers of the UNUM-iii category (1). The architectural Algorithm of such filter including an Adder, Subtraction, Multiplier, and Divisor along with the Logarithmic and Trigonometric function play a vital role in efficient Filter design with efficient algorithm has been implemented in FPGA with proper Data Path design that develops a new and unique categorical study for several many more implementation and prototypes. The abstract also showers light on the Verilog domain for the presentation of the Data path design and Posit number Extracting, Detecting, Shifting, Rounding, and lastly packaging for presentation for various arithmetic operations.

**KEYWORDS:** IIR Filter, Posit numbers, Modified Booths Radix-4 Algorithm, Wallace Tree, Compressors 8:2, 4:2, Full Adder, Tools: Xilinx 14.7, ISim, Verilog HDL & Microsoft Visio 2013.

## I. INTRODUCTION

IIR Filters are the backbone of VLSI & DSP technology of almost all the competitive domains of Electronics. Here we are presenting and emulating the details of an IIR Filter using Posit Arithmetic multi-core word format for Data path as an example of the Filter Architecture. The implementation is based on the IIR Low Pass Direct Form-1 Filter with transfer function as shown in equation 1.

$$\frac{Y[z]}{X[z]} = \frac{1 - 2 \cos \omega z^{-1} + z^{-2}}{1 - 2 \alpha \cos \omega z^{-1} + \alpha^2 z^{-2}} \dots\dots\dots (1)$$

The Direct Form-1 IIR Filter possesses the following properties [1]:

- 1) The filter is also known as 2 zeros and 2 Poles filters because of the second-order polynomial present.
- 2) By using One Summation node, the Wrapping condition is avoided at the output. (This is more benefits of using Posit Format since there is no issues and intricacies related for Wrapping) [2] [3].
- 3) The order of the filter is defined by the number of delays in each section. [1]
- 4) The Transfer function is very sensitive to the coefficients, hence any truncation or rounding (i.e. Quantization) results in much frequency change hence the behavioral [2] [4]. In turn, this supports the Posit Format representation since the fractional bits are more precise in Posit numbers as compared to the Floating-point or Fixed point presentation. The implantation is carried out with full use of the vertex-3 Xilinx DSP board. The first stage of the project is implemented and emulated for Posit numbers for N=32(word size) bits with ES=2 (exponent size) which is extracted and made available for described Arithmetic processes required in the function shown. The next stage is the modeling of the IIR filter with the properly designated coefficients required for a Low Pass, the output, and the result has been mentioned in detail. The function appears to be simple second-order IIR filter which can be and easily calculable and implemented, along with the damping factor ( $\alpha$ ) and quality factor ( $Q = \frac{1}{2\alpha}$ ) the filter holds the deep information in terms of it coefficients



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## Design Technique for Head Selection in WSNs to Enhance the Network Performance Based on Nodes Residual Status: an Extension to EBRS Method

Amairullah Khan Lodhi, M.S.S Rukmini, Syed Abdulsattar, Mazher Khan, Shaikh Zeba Tabassum

### Abstract

Power efficiency plays a very important role in the sensor networks spatially in wireless networks like WSNs. These wireless networks are composed of geographically scattered independent nodes in attachment with the wireless sensors to sense and retain various physical and environmental states from the atmosphere. The batteries, attached to these sensors, are outfitted with limited power and limited storage space capabilities. Hence, it is very essential to make energy stability in the wireless network for making efficient data transmission for performance enhancement in the system. Thus, to enhance network performance, energy-balancing techniques are required to provide a link with efficiently routing the data in the network with minimum power expenditure. Hence, the clustering is one of the best ways to balance the overall energy. Furthermore, the cluster head can further improve the network performance by the properly maintained status of the energy and buffer. The existing algorithm selects the head node of the cluster based on remaining power status only. Conversely, they root the cluster-head to become a bottleneck node and make to drop the packets due to insufficient buffer. Therefore, it is very essential to maintain these parameters to improve network performance. Hence, we propose a new efficient metric for choosing the head node known as "Cluster Head Selection Based on Energy and Buffer Residual Status" to increase the network performance. This work provides the residual status of the head node based on the available power as well as the buffer status. The calculations are done by the



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## Network Lifetime Enhancement in WSN Using Energy and Buffer Residual Status with Efficient Mobile Sink Location Placement

M.S.S Rukmini , Amairullah Khan Lodhi

### Abstract

A wireless sensor network (WSN) consists of autonomous nodes with sensors to sense and collect the status of the surrounding environment continuously. Characteristics of WSN are infrastructureless, self-organizing, and fault tolerance. One of the applications of WSN is living and sleeping pattern reorganization in the home environment. The sensed information is transmitted to the sink node in a single or multi-hop communication manner. The sink node is equipped with a sufficient amount of processing and battery capabilities, but sensor nodes are outfitted with the restricted battery as well as processing capabilities. The energy depletion of any sensor node directly affects the sensing coverage and thereby on the network performance. Particularly the sensor node that is neighbor to the sink node faces the extra overload and drops the information due to insufficient buffer. Moreover, the neighbor of sink node exhaust soon due to the energy depletion. Thus the placing the sink node in a suitable position in WSN is a quite vital design issue and it influences the performance of the WSN. The paper designs an efficient mechanism



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## Energy-Efficient Routing Protocol for Node Lifetime Enhancement in Wireless Sensor Networks

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### ABSTRACT

Wireless sensor networks (WSNs) countenance some deceitful attack which may damage instructions and capacity in an elegant way and with irregular performance to fabricate the premier damage without being exposed. WSNs often consist of tiny devices with limited energy, computational power, transmission range, and memory. Energy is one of the most important resources in such networks. Therefore, optimal use of energy is necessary. In this paper, we present a novel energy-efficient routing protocol for WSNs. The suggested protocol may be hierarchic and group built. Every bunch comprises from claiming one cluster head (CH) node, two agent CH nodes, also a percentage conventional sensor hubs. Those reclustering the long haul Also vitality necessities need been minimized Eventually Tom's perusing presenting the idea from CH board. Recent approaches use selective encryption to minimize energy consumption. WSNs are resource constrained. Moreover, exchange ways need aid utilized to information transmission the middle of An CH hub and the bs. Thorough reproduction effects portray those vitality efficiency, throughput, and prolonged lifetime of the hubs under that impact of the suggested protocol. Future scope from claiming this worth of effort will be delineated.

**Key words:** Wireless Sensor Network, mobile base station, Path tracing, mo-bile nodes, Energy efficiency, reliability, routing protocol, sensor nodes, Heterogeneous WSN.

### 1. INTRODUCTION

A Wireless Sensor Network (WSN) consists of the self-directed nodes that are spread spatially for preservation of environmental or substantial states such as humidity, gravity, temperature, etc. WSN integrates an access, between the nodes and a client, to provide wireless connectivity to both the wireless distributed nodes and wired surroundings.

As shown the figure 1, the Common applications of WSNs are Health Care monitoring; Earth sensing, Forest fire detection, data recording, enemy intrusion detection and geo-fencing [1]. In this work, we provide a comprehensive survey on energy-efficient WSN protocols [2].

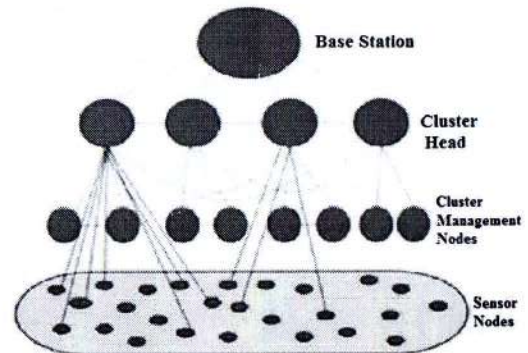


Figure 1: WSN System Basic Architecture

WSN schemes used in routing messages are classified into four categories i.e. Communication model, Network structure, Reliable routing schemes and topology-based routing schemes. It takes the amount of power and energy into consideration to minimize the energy consumption and to increase the lifetime of WSNs. We also discuss and compare their metrics such as scalability, mobility, and power usage [3].

### 2. RELATED WORK

The most important factor when developing WSN routing protocols is energy efficiency of a node, which has a direct impact on the network lifetime. Several surveys are there including current efforts and future work to develop energy efficient routing protocols. Some of those literatures on routing protocols are presented below with the discussion of comparison of existing protocols and our work.

A survey done on routing protocols on WSNs is discussed in [3] which classifies the routing protocols into three categories according to structure of the network: Flat, location-based and hierarchical infrastructure. These protocols are further classified into query-based, multipath-based, QoS (Quality of service) based and negotiation-based routing techniques according to protocol operations. Thus, the survey describes the limited supply of energy, computing power and bandwidth of the wireless sensor nodes along with the advantages and disadvantages of each routing protocol. In this work, we compare energy efficient routing protocols comprehensively focusing on energy efficiency issues to help the researchers on their work.



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# Energy-Efficient Routing Protocol Based on Mobile Sink Node in Wireless Sensor Networks

Amairullah Khan Lodhi, M. S. S. Rukmini, Syed Abdulsattar

**Abstract**— Wireless networks be comprise of spatially spread independent sensor node linked with each other for maintaining and detecting the environmental as well as physical states of the given application. The batteries of these sensor nodes are outfitted with limited energy to work as a source of energy. Hence, efficient energy utilization is a significant challenge in these types of networks, which are equipped with batteries having limited power storage capacities. Thus, routing techniques with energy efficiency are needed in corporate operations of WSN to provide the connectivity and data transmission in a network with minimum energy consumption. So, routing protocols are one of the key considerable factors to minimize the consumption of energy and lifetime elaboration of the network. Thus, this work gives the development of routing protocol with efficient energy to elaborate systems lifetime by selecting a proper route with the consideration of “reactively the status of an intermediate node”. Proposed protocol “reactively the status of an intermediate node” computes the route finding metric based on current energy condition of an intermediate node. To offer a complete understanding of energy-aware routing, protocols are developed for WSN and superimpose the path for forthcoming investigation; in this paper, the feat of “energy-aware routing protocol based on residual status” is analyzed in detail. Based on performance parameters analyzed such as delivery of the packet, the lifetime of the network, and delay (end to end); through NS2 simulator, the result shows proposed system performs better than the present protocols in terms of systems lifetime as well as other metrics considered.

**Keywords:** Efficient Energy, WSN, Route Discovery Time, Delay, Packet Loss.

## I. INTRODUCTION

Nowadays different waste delivered from several Industries is an improbable issue. These materials will lead to pollution of the environment; this industrial waste contains a vast number of non-biodegradable substances. As of late, utilization of this industrial waste has been considered in pavement construction with incredible enthusiasm for creating communities. The usage depended on specialized, financial, and living criteria. The absence of conventional pavement materials and the protection of nature make it essential to examine the credible utilization of these materials. Many researchers has carried out their research to control fatigue cracking in flexible pavements by using modified bitumen at binder course but still more research has to be carried. Base course of a pavement have low resistance towards the tensile stresses and dynamic loads which leads to the failure of pavements and maintenance of roads,

The major failure in flexible pavements is fatigue cracking This fatigue leads to formation of cracks, pot holes and undulations on the pavements. In flexible pavements load will be distributed into lower layers in decreasing order. EPDM rubber consists of properties like tensile strength, abrasion, resistance to temperature. Wireless communication technology in WSN contains two types of communication methodologies i.e., Wireless transportation based communication model and wireless transportation-less network communication model [1]. Wireless transportation based communication model contains wireless movable nodes and permanent nodes. The wireless movable nodes exchange the information data with fixed nodes through pre-established transportation [2]. The wireless transportation-less system communication model is nothing but wireless MANETs which contains movable wireless nodes spread in the radio communication region and they communicate with each other through relying on in-between node i.e., with lacking transportation and thus WSN has to perform as a peer to peer network. However, contact among communicating nodes is very challenging due to the features of WSN. Moreover, wireless movable node working in a network has restricted with power batteries and it is not probable to recharge the energy of the batteries during the given task. Applications of WSN mainly include military, healthcare, natural, household & commercial areas as well as disaster recovery. Due to its variety of features, WSN is paying attention by the majority of the researchers and hence the group of routing protocols has been intended based on considering diverse parameters. One of those routing protocols is “energy aware routing protocol based on the reactive status of movable nodes” [3]. This work present the state of art performance analysis of “energy aware routing protocol based on the reactive status of mobile nodes” designed for wireless networks. However, it is a lot demanding to justice the current position of routing protocol for the particular network state. In future, the motivation is to split the network state into different categories and after that evaluates the different routine metrics. Based on present investigation parameters such as delivery of packets, the lifetime of the network, and end-to-end delay our work performance is analyzed with the help of network simulator-2 (NS-2) [4]. Furthermore, the performance grades of our work can be used by researchers for their future research. Even though a lot of research efforts carried out within literature in the direction to calculate the performance of dissimilar routing protocols for WSN based on different network circumstances, this work contains performance investigation metric as the lifetime of the network, delivery of packet, overhead and delay (end-to-end). Furthermore, these metrics extremely suitable to calculate the execution of energy-aware routing protocols used for WSN.

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# Efficient Energy Routing Protocol based on Energy & Buffer Residual Status (EBRS) for Wireless Sensor Networks

Amairullah Khan Lodhi, M.S.S Rukmini, Syed Abdulsattar

**Abstract-** Wireless networks consist of nodes, having the ability that, they can sense and collect the information from the nearby surroundings. It has the responsibility of designed protocol to send this collected information by data gathering and forward it to the outside network via a sink node. Furthermore, WSNs doesn't need any predetermined network structure; all the nodes used in WSN can operate as a router as well as the host. It uses multiple hops to send information to the node outside the communication range through different neighbor nodes. All the sensor nodes in WSN have their range of communication and can send and collect messages straight to each other until they were in the communication range. Moreover, the Self-organizing property of nodes in the network made WSN outstanding amongst the major applications. Nevertheless, the wireless nodes there in the network have a battery with restricted energy and can't be recharge or change once deployed. Hence, the node energy must be utilized efficiently for various functions as sensing the information, processing the sensed information, and transmitting the processed information to another node. With the enhancements of the innovation and cost-effective hardware, our visualization presents a tremendous life enhancement of WSN into several new applications. To modify following such background, the energy-efficient routing protocol is extremely desirable and can be achieved by clustering in WSN. In the literature survey, various energy-efficient routing techniques based on cluster have been given to attain the energy-efficiency and enhance the lifetime of the network. However, these protocols were suffering from the bottleneck node issue. It is the situation in the network where the router node subjected to heavy traffic due to its presence in energy-efficient routing path or high remaining energy. This paper aims to moderate the possibility of the node to become a bottleneck node throughout the application. Thus, we attain the objective by design and develop the cluster-based efficient-routing protocol by selecting the head nodes of the cluster based on their residual energy and buffer status. Performance outcome shows that the projected work out-performs in contrast with present cluster-based routing protocols.

**Keyword:** - Wireless Sensor Network; Sink Node, Cluster Head, Energy efficiency, Buffer, Routing, Network Lifetime, Mobile Sink Node, and Control Packets.

## I. INTRODUCTION

The wireless sensor networks (WSNs) are built up of "nodes" commencing a small amount to numerous hundreds or sometimes thousands. Moreover, all nodes are associated with one or numerous sensor nodes.

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These wireless nodes have different parts: like an energy source, an electronic circuit for interfacing, a microcontroller, a radio transceiver, and usually a battery or nowadays a power harvesting module in the embedded form [1].

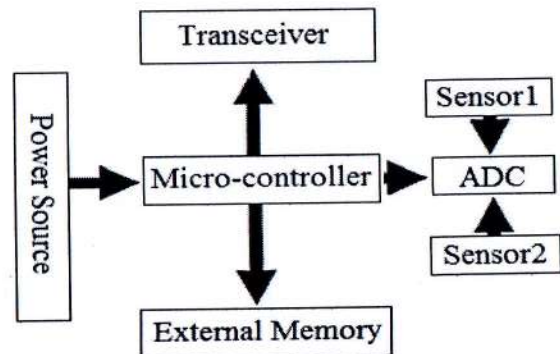


Fig. 1: Basic Structure of Sensors

The three main functions performed by all the wireless nodes are sensing the nature, preprocessing & storage of data information with transmission along with the nodes and with the destination (sink). The WSNs is an isolated system with different sensor nodes to gather and forward the data from surrounding sensor nodes or environment after processing them [2]. The figure below shows various SNs which collects the information from the nearby atmosphere and transfer the collected information to the target node (sink) through gateway [3].

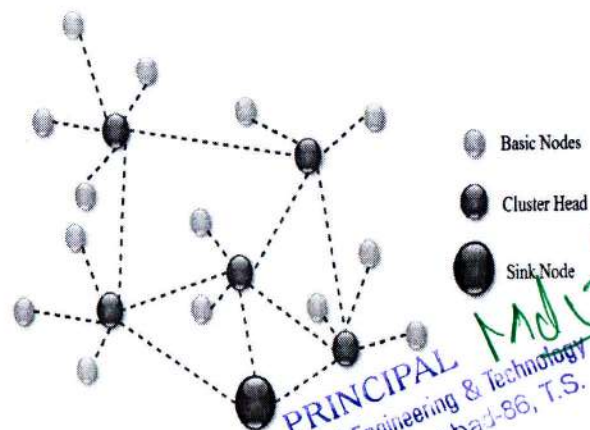


Fig.2. the basic structure of WSN

Characteristics of a good wireless network includes the minimization in consumption of energy for nodes with battery as a source, scalability to a large scale of distribution, node failure handling capacity



## Analysis Of Power Leakage Controlling In 7t Sram Cell Using Self-Controlling Technique For High Security Data Transformation

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### Abstract

In Today's Digital Era, Any Integrated Device's Memory Is An Unavoidable Component. It Also Significantly Increases The Overall Circuit Capacity. Nanotechnology Is Attracting Chip Manufacturers' Attention As The Market For Handheld Devices Grows. Portable Devices With Static Random Access Memory, On The Other Hand, Experience A Power Drain. Leakage Capacity Becomes More Important Than Complex Power Usage As Technology Advances. As A Result, In Our Proposed Sram Memory, We Used The Power Gating Strategy To Reduce Power Consumption, Which Is A Requirement Of The Day. To Reduce Leakage Capacity, We've Added A New Function. Because Of The Leakage Current In Both Pmos And Nmos With Similar Part Sizes. The Move Semiconductors Of Sram Cells Are Replaced With Pmos Rather Than Nmos To Further Reduce Leakage Power Consumption.

**Keywords:** Power Analysis, Sram Design, 6t Sram, 7t Sram, Power Dissipation.

### Introduction

Sram, A Key Component Of The Chip, Is Anticipated To Be Widely Used In High-Performance Servers And Portable Computers. Low-Power Sram Is Crucial For Mobile Devices To Achieve Higher Performance And Longer Battery Life [1]. Data Lines, Bit Lines, And Peripherals Consume The Majority Of The Power In The Sram. These Goods' Successful Energy Usage [2] [3]. During The Write Phase Of The Total Dynamic Power Usage, Bit Lines Dissipate Almost Half Of The Power [4]. The Primary Goal Of Low-Power Sram Application Techniques Is To Reduce Energy Usage. Data Lines, Bit Lines, And Word Lines Are The Memory's Largest Capacitive Elements. The Usage Of Machines To Store Sensitive And Secret Information Has Increased In Many Applications [5]. Side Channel Attacks (Scas) That Extort Critical Intelligence Are A Significant Threat To These Systems [6]. Power Checking Is A Kind Of Side Channel Assault That Takes Advantage Of Knowledge That Leaks During Device Power Dissipation [6]. The Relationship Between Device Power Usage And Stored Data Is Used In The Energy Analysis. Since Pa Technology's Ability To Retrieve Useful Knowledge Utilising Device Power Dynamic Properties Has Been A Serious Challenge To The Security Of Cryptographic Systems[7], Multiple Papers Have Demonstrated The Efficacy Of Leakage Power Analysis On Structures-Based And More Deeply Scaled Technologies[8]. The Importance Of Power Analysis Attacks On Logic Circuits, As Well As The Development Of Secure Logic, The Design Of Safe Memory Architectures, And The Study Of Power Attacks On Embedded Memories[9][10]. Embedded Storages Are Mostly Implemented With A 6-Transistor (6t) Sram Array That Takes Up The Space And Power Of Several Vlsi System-On-Chips. The 6t Sram Array Is A Key Component In A Number Of Cryptographic Schemes, Including Smart Cards And Network Computers That Use Cryptographic Algorithms [11]. These Programmers Use Sram Arrays To Store Instruction Code And Records. The Research And Creation Of Safe Interactions Must Therefore Be Done With The Utmost Amount Of Care.

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