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## Criterion 3

### 3.3 Research Publication and Awards

#### 3.3.1 Number of Research Papers Published per Teacher in the Journals Notified on UGC Care List during the Last Five Years

| Sr. No. | Parameter       | Academic Year | Number of Research papers |
|---------|-----------------|---------------|---------------------------|
| 1       | Research Papers | 2022-23       | 18                        |
| 2       |                 | 2021-22       | 07                        |
| 3       |                 | 2020-21       | 01                        |
| 4       |                 | 2019-20       | 12                        |
| 5       |                 | 2018-19       | 10                        |



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# Criterion 3

## 3.3 Research Publication and Awards

# Link Landing to Research Paper





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**Academic Year 2022-2023**

| Sr. No. | Title of Paper   | Name of the Author/s    | Name of Journal   | ISSN      | Link to Paper Published of the Journal  |
|---------|--|-------------------------|---|-----------|---|
| 1       | Health Monitoring of Milling Tool Inserts Using CNN Architectures Trained by Vibration Spectrograms  | Mrs. Sonali S. Patil    | Computer Modelling in Engineering and Sciences                | 1526-1492 | <a href="https://www.techscience.com/CMES/v136n1/51215">https://www.techscience.com/CMES/v136n1/51215</a>   |
| 2       | Effects of machining parameters on dry turning operation of Nickel 200 alloy   | Dr. Sachin Mutalikdesai | International Journal on Interactive Design and Manufacturing | 1955-2513 | <a href="https://link.springer.com/article/10.1007/s12008-023-01442-1#:~:text=The%20maximum%20level%20of%20spindle,induces%20a%20higher%20cutting%20force.">https://link.springer.com/article/10.1007/s12008-023-01442-1#:~:text=The%20maximum%20level%20of%20spindle,induces%20a%20higher%20cutting%20force.</a> |
| 3       | Spatio–Temporal Attention based Real-Time Environmental Monitoring Systems for Landslide Monitoring and Prediction                               | Dr. Anjali Joshi        | Spatial Information Research                                  | 2366-3294 | <a href="https://link.springer.com/article/10.1007/s41324-023-00532-2">https://link.springer.com/article/10.1007/s41324-023-00532-2</a>   |
| 4       | Impact of Variation in Geotechnical Properties of Backfill Material on the Serviceability of Cantilever Earth Retaining Structure : A Case Study | Mr. Atul P. Khatri      | European Chemical bulletin                                    | 2063-5346 | <a href="https://www.eurchembull.com/uploads/paper/0718e35278e18db29d4a1b1d52e3f8c9.pdf">https://www.eurchembull.com/uploads/paper/0718e35278e18db29d4a1b1d52e3f8c9.pdf</a>   |
| 5       | Fusion-Based Representation Learning Model for Multimode User-Generated Social Network Content   | Dr. Anjali Joshi        | Journal of Data and Information Quality                       | 1936-1963 | <a href="https://dl.acm.org/doi/10.1145/3603712">https://dl.acm.org/doi/10.1145/3603712</a>   |



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| Sr. No. | Title of Paper  | Name of the Author/s  | Name of Journal  | ISSN      | Link to Paper Published of the Journal  |
|---------|---|-----------------------|--|-----------|---|
| 6       | A Secure Storage Management & Auditing Scheme for Cloud Storage | Mr. Subhash G. Rathod | International Journal on Recent and Innovation Trends in Computing and Communication | 2321-8169 | <a href="https://ijritcc.org/index.php/ijritcc/article/view/6765">https://ijritcc.org/index.php/ijritcc/article/view/6765</a> |
| 7       | A Secure Storage Management & Auditing Scheme for Cloud Storage | Mr. Ashish K. Bhise   | International Journal on Recent and Innovation Trends in Computing and Communication | 2321-8169 | <a href="https://ijritcc.org/index.php/ijritcc/article/view/6765">https://ijritcc.org/index.php/ijritcc/article/view/6765</a> |
| 8       | A Secure Storage Management & Auditing Scheme for Cloud Storage | Mr. Nisar S. Shaikh   | International Journal on Recent and Innovation Trends in Computing and Communication | 2321-8169 | <a href="https://ijritcc.org/index.php/ijritcc/article/view/6765">https://ijritcc.org/index.php/ijritcc/article/view/6765</a> |
| 9       | A Secure Storage Management & Auditing Scheme for Cloud Storage | Mr. Yogesh B. Dongare | International Journal on Recent and Innovation Trends in Computing and Communication | 2321-8169 | <a href="https://ijritcc.org/index.php/ijritcc/article/view/6765">https://ijritcc.org/index.php/ijritcc/article/view/6765</a> |



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| Sr. No. | Title of Paper   | Name of the Author/s           | Name of Journal  | ISSN      | Link to Paper Published of the Journal  |
|---------|--|--------------------------------|--|-----------|---|
| 10      | A Secure Storage Management & Auditing Scheme for Cloud Storage                              | Mr. Suhas R. Kothavle          | International Journal on Recent and Innovation Trends in Computing and Communication | 2321-8169 | <a href="https://ijritcc.org/index.php/ijritcc/article/view/6765">https://ijritcc.org/index.php/ijritcc/article/view/6765</a>     |
| 11      | Sub-zero Quasi-static and Fatigue Behaviour of SAE 1040 Automotive Anti-roll Bars in Flexure | Mr. Amol S. Bhanage            | SAE International Journal of Passenger Vehicle Systems                               | 2770-3479 | <a href="https://saemobilus.sae.org/content/15-16-02-0010/">https://saemobilus.sae.org/content/15-16-02-0010/</a>                 |
| 12      | Security for Shared Data Over Public Cloud for Maintaining Privacy                           | Mr. S. G. Rathod               | Mathematical Statistician and Engineering Applications                               | 2094-0343 | <a href="https://www.philstat.org/index.php/MSEA/article/view/1336">https://www.philstat.org/index.php/MSEA/article/view/1336</a> |
| 13      | Experimentation with Novel Factors Affecting Earth Resistance using Taguchi Method           | Mrs. M. R. Yashwante (Bhosale) | Journal of The Institution of Engineers (India): Series B                            | 2250-2106 | <a href="https://doi.org/10.1007/s40031-023-00856-5">https://doi.org/10.1007/s40031-023-00856-5</a>                               |
| 14      | An Optimal Design for Grounding Grid Configuration with Unequal Conductor Spacing            | Mrs. M. R. Yashwante (Bhosale) | Advances in Engineering Software   | 1873-5339 | <a href="https://doi.org/10.1016/j.advengsoft.2022.103367">https://doi.org/10.1016/j.advengsoft.2022.103367</a>                   |



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| Sr. No. | Title of Paper   | Name of the Author/s           | Name of Journal   | ISSN      | Link to Paper Published of the Journal  |
|---------|--|--------------------------------|---|-----------|---|
| 15      | A Novel Approach for Grounding Resistance Estimation Approach for Grounding Resistance Estimation  | Mrs. M. R. Yashwante (Bhosale) | Indonesian Journal of Electrical Engineering and Computer Science | 2502-4752 | <a href="http://doi.org/10.11591/ijeecs.v27.i2.pp583-591">http://doi.org/10.11591/ijeecs.v27.i2.pp583-591</a>                           |
| 16      | Dynamic Soil-Structure Interaction of Multi- Story Buildings using the Finite Element Method and Minimax Probability Machine Regression  | Mr. Saurav Kar                 | Engineering, Technology and Applied Science Research              | 2241-4487 | <a href="https://etasr.com/index.php/ETASR/article/view/5870">https://etasr.com/index.php/ETASR/article/view/5870</a>                   |
| 17      | Quasi-Static and Fatigue Reliability Analysis of C45 Automotive Leaf Spring Beam Under Flexural Loads in Sub-Zero Temperature            | Mr. Amol S. Bhanage            | Journal of Failure Analysis and Prevention                        | 2244-2259 | <a href="https://link.springer.com/article/10.1007/s11668-022-01496-5">https://link.springer.com/article/10.1007/s11668-022-01496-5</a> |
| 18      | Quasi-Static and Fatigue Reliability of Glass/Epoxy Composite Automotive Leaf Spring Beams Under Flexural Loads at Sub-Zero Temperatures | Mr. Amol S. Bhanage            | Journal of Failure Analysis and Prevention                        | 2244–2259 | <a href="https://link.springer.com/article/10.1007/s11668-022-01566-8">https://link.springer.com/article/10.1007/s11668-022-01566-8</a> |



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**Academic Year 2021-2022**

| Sr. No. | Title of Paper  | Name of the Author/s | Name of Journal   | ISSN      | Link to Paper Published of the Journal  |
|---------|---|----------------------|---|-----------|---|
| 1       | Attention Layer-Based Multidimensional Feature Extraction for Diagnosis of Lung Cancer              | Dr. Manisha Bhende   | BioMed Research International                           | 2314-6141 | <a href="https://www.hindawi.com/journals/bmri/2022/3947434/">https://www.hindawi.com/journals/bmri/2022/3947434/</a> |
| 2       | Classification Of Bioinformatics EEG Data Signals to Identify Depressed Brain State Using CNN Model | Dr. Manisha Bhende   | BioMed Research International                           | 2314-6141 | <a href="https://www.hindawi.com/journals/bmri/2022/5214195/">https://www.hindawi.com/journals/bmri/2022/5214195/</a> |
| 3       | Deep Learning-Based Real-Time Discriminate Correlation Analysis for Breast Cancer Detection         | Dr. Manisha Bhende   | BioMed Research International                           | 2314-6141 | <a href="https://www.hindawi.com/journals/bmri/2022/4609625/">https://www.hindawi.com/journals/bmri/2022/4609625/</a> |
| 4       | Identification And Classification of Depressed Mental State for End-User Over Social Media          | Dr. Manisha Bhende   | Computational Intelligence and Neuroscience             | 1687-5273 | <a href="https://www.hindawi.com/journals/cin/2022/8755922/">https://www.hindawi.com/journals/cin/2022/8755922/</a>   |
| 5       | Integrating Multiclass Light Weighted BiLSTM Model for Classifying Negative Emotions                | Dr. Manisha Bhende   | Computational Intelligence and Neuroscience             | 1687-5273 | <a href="https://www.hindawi.com/journals/cin/2022/5075277/">https://www.hindawi.com/journals/cin/2022/5075277/</a>   |
| 6       | Deep Learning Model to Revel New Healthcare Concepts and Improve Performance                        | Dr. Manisha Bhende   | Bulletin of Environment, Pharmacology and Life Sciences | 2277-1808 | <a href="https://bepls.com/april_2022/6.pdf">https://bepls.com/april_2022/6.pdf</a>                                   |



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| <b>Sr. No.</b> | <b>Title of Paper</b>  | <b>Name of the Author/s</b> | <b>Name of Journal</b>           | <b>ISSN</b> | <b>Link to Paper Published of the Journal</b>   |
|----------------|--|-----------------------------|----------------------------------|-------------|---|
| 7              | Application of the IoT To Predict the Patient’s Health and Stress Elimination Using Machine Learning Algorithm | Dr. Manisha Bhende          | Journal of Optoelectronics Laser | 1005-0086   | <a href="http://www.gdzjg.org/index.php/JOL/article/view/80">http://www.gdzjg.org/index.php/JOL/article/view/80</a> |





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**Academic Year 2020-2021**

| <b>Sr. No.</b> | <b>Title of Paper</b>  | <b>Name of the Author/s</b> | <b>Name of Journal</b>  | <b>ISSN</b> | <b>Link to Paper Published of the Journal</b>   |
|----------------|--|-----------------------------|---|-------------|---|
| 1              | Research Perspective on Energy Efficient Protocols in IoT: Emerging Development of Green IoT | Mr. Umakant Tupe            | International Journal of Pervasive Computing and Communications | 1742-7371   | <a href="https://www.emerald.com/insight/content/doi/10.1108/IJPCC-10-2019-0079/full/html">https://www.emerald.com/insight/content/doi/10.1108/IJPCC-10-2019-0079/full/html</a> |



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**Academic Year 2019-2020**

| Sr. No. | Title of Paper  | Name of the Author/s | Name of Journal  | ISSN      | Link to Paper Published of the Journal  |
|---------|---|----------------------|--|-----------|---|
| 1       | Factors affecting epidemic diseases spread and prediction of it | Mr. S. S. Chaudhari  | Studia Rosenthaliana (Journal for the Study of Research)       | 1781-7838 | <a href="https://doi.org/10.5748/JSR/2020.VXIII3/098.09327">DOI.05.748/JSR/2020.VXIII3/098.09327</a>  |
| 2       | Brain Tumor Detection And Segmentation                          | Mrs. S. K. Patil     | International Journal for Research & Development in Technology | 2349-3585 | <a href="https://www.ijrdt.org/full_paper/46621/1022/Brain-Tumor-Detection-and-Segmentation">https://www.ijrdt.org/full_paper/46621/1022/Brain-Tumor-Detection-and-Segmentation</a>           |
| 3       | Blind Assistant   | Mr. S. G. Rathod     | Studia Rosenthaliana (Journal for the Study of Research)       | 1781-7838 | <a href="https://www.jsrpublication.com/gallery/9-jsr-may-s445.pdf">https://www.jsrpublication.com/gallery/9-jsr-may-s445.pdf</a>   |
| 4       | IOT Based Soldier E-JACKET using GPS                            | Mr. S. S. Chaudhari  | Studia Rosenthaliana (Journal for the Study of Research )      | 1781-7838 | <a href="https://www.researchgate.net/publication/339787165_IOT_BASED_SOLDIER_E-JACKET_USING_GPS">https://www.researchgate.net/publication/339787165_IOT_BASED_SOLDIER_E-JACKET_USING_GPS</a> |
| 5       | Computerized Adaptive Assessment                                | Mr. D. B. Satre      | Journal of Emerging Technologies and Innovative Research       | 2349-5162 | <a href="https://www.jetir.org/view?paper=JETIR1908797">https://www.jetir.org/view?paper=JETIR1908797</a>   |
| 6       | Guester based mobile robot controller system                    | Mr. Umakant Tupe     | Studia Rosenthaliana (Journal for the Study of Research )      | 1781-7838 | <a href="https://www.jsrpublication.com/gallery/10-jsr-may-s427.pdf">https://www.jsrpublication.com/gallery/10-jsr-may-s427.pdf</a>   |



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| Sr. No. | Title of Paper  | Name of the Author/s        | Name of Journal   | ISSN      | Link to Paper Published of the Journal  |
|---------|---|-----------------------------|---|-----------|---|
| 7       | A Knowledge-based Recommendation system using Deep Learning                             | Mrs. S. S. Muley            | Studia Rosenthaliana (Journal for the Study of Research ) | 1781-7838 | <a href="https://www.jsrpublication.com/gallery/34-jsr-may-s494.pdf">https://www.jsrpublication.com/gallery/34-jsr-may-s494.pdf</a>                         |
| 8       | Transaction Authentication Using Face Detection And Invisible Keyboard Sequence         | Mrs. S. S. Muley            | GIS SCIENCE JOURNAL                                       | 1869-9391 | <a href="https://drive.google.com/file/d/1vHMtQNOosl2SddDm0wQGWRz1oyFLzvf6/view">https://drive.google.com/file/d/1vHMtQNOosl2SddDm0wQGWRz1oyFLzvf6/view</a> |
| 9       | An Efficient Approach to Control the Over Speeding of Vehicles                          | Mr. S. A. Agrawal           | Studia Rosenthaliana (Journal for the Study of Research ) | 1781-7838 | <a href="https://www.jsrpublication.com/gallery/33-jsr-april-s426%20(1).pdf">https://www.jsrpublication.com/gallery/33-jsr-april-s426%20(1).pdf</a>         |
| 10      | Internet Based Room Controller  | Mr. P. V. Deshmukh          | Studia Rosenthaliana (Journal for the Study of Research ) | 1781-7838 | <a href="https://www.jsrpublication.com/gallery/19-jsr-may-s462.pdf">https://www.jsrpublication.com/gallery/19-jsr-may-s462.pdf</a>                         |
| 11      | Experimental Investigation of SiO <sub>2</sub> Coating on the Performance of Solar Pane | Mr. Girish L. Allampallewar | Test Engineering and Management                           | 0193-4120 | <a href="http://www.testmagazine.biz/index.php/testmagazine/article/view/2169">http://www.testmagazine.biz/index.php/testmagazine/article/view/2169</a>     |
| 12      | Design and Fabrication of Zero Turn Vehicle   | Mr. R. P. Polas             | Journal of Gujarat Research Society                       | 0374-8588 | <a href="http://www.gujaratresearchsociety.in/index.php/JGRS/article/view/589">http://www.gujaratresearchsociety.in/index.php/JGRS/article/view/589</a>     |



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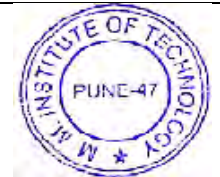
**Academic Year 2018-2019**

| <b>Sr. No.</b> | <b>Title of Paper</b>   | <b>Name of the Author/s</b> | <b>Name of Journal</b>   | <b>ISSN</b> | <b>Link to Paper Published of the Journal</b>   |
|----------------|---|-----------------------------|--|-------------|---|
| 1              | Numerical and Experimental Investigations on Flexural Fatigue Behaviour of Glass/Epoxy Composite and SAE 1040 Steel Tubes for Automotive Applications | Mr. Amol S. Bhanage         | SAE Technical Paper  | 2688-3627   | <a href="https://saemobilus.sae.org/content/2019-26-0317/">https://saemobilus.sae.org/content/2019-26-0317/</a>   |
| 2              | Decomposition Of the Product of Cycles Based on Degree Partition  | Dr. S. R. Shaikh            | Discussiones Mathematicae Graph Theory                         | 2083-5892   | <a href="https://www.researchgate.net/publication/326586990_Decomposition_of_the_product_of_cycles_based_on_the_degree_partition">https://www.researchgate.net/publication/326586990_Decomposition_of_the_product_of_cycles_based_on_the_degree_partition</a> |
| 3              | Factorizations of the Product of Cycles   | Dr. S. R. Shaikh            | AKCE International Journal of Graphs and Combinatorics         | 2543-3474   | <a href="https://www.tandfonline.com/doi/full/10.1016/j.akcej.2018.06.003">https://www.tandfonline.com/doi/full/10.1016/j.akcej.2018.06.003</a>   |
| 4              | Review on Social Media Mental Disorder Detection System   | Mr. S. A. Agrawal           | International Journal of Computer Engineering and Applications | 2321-3469   | <a href="#">Not Available</a>   |
| 5              | Smart Shoes Navigation  | Mrs. S.K. Patil             | International Journal of Computer Engineering and Applications | 2321-3469   | <a href="#">Not Available</a>   |



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| Sr. No. | Title of Paper  | Name of the Author/s | Name of Journal  | ISSN      | Link to Paper Published of the Journal  |
|---------|---|----------------------|--|-----------|---|
| 6       | Interaction with platform Games using Smart Watch   | Mrs. D. J. Bonde     | International Journal of Computer Engineering and Applications | 2321-3469 | <a href="#">Not Available</a>   |
| 7       | Smart Electronic wheelchair using Bluetooth Module and IOT  | Mrs. K. S. Surawase  | Journal of Emerging Technologies and Innovative Research       | 2349-5162 | <a href="https://www.jetir.org/papers/JETIR1902929.pdf">https://www.jetir.org/papers/JETIR1902929.pdf</a>               |
| 8       | A Survey: Machine Learning Approach for Tracking and Predicting Student Performance in Degree Programs                    | Mr. D. B. Satre      | Journal of Emerging Technologies and Innovative Research       | 2349-5162 | <a href="https://www.jetir.org/papers/JETIR1902B32.pdf">https://www.jetir.org/papers/JETIR1902B32.pdf</a>               |
| 9       | A Parallel System Implementation of Classification and Disease Prediction on Machine Learning from Healthcare Communities | Mr. S. S. Chaudhari  | International Journal of Research and Analytical Reviews       | 2349-5138 | <a href="http://ijrar.org/viewfull.php?&amp;p_id=IJRAR19J2356">http://ijrar.org/viewfull.php?&amp;p_id=IJRAR19J2356</a> |
| 10      | Review of Blockchain based Forensics Analysis Secure Node Diagnosis Mechanism of Smart Grid                               | Mr. S. A. Agrawal    | International Journal of Research and Analytical Reviews       | 2349-5138 | <a href="http://ijrar.org/viewfull.php?&amp;p_id=IJRAR19J2596">http://ijrar.org/viewfull.php?&amp;p_id=IJRAR19J2596</a> |





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# Criterion 3

## 3.3 Research Publication and Awards

**Link to Journal Website**





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**Academic Year 2022-2023**

| <b>Sr. No.</b> | <b>Title of Paper</b>  | <b>Name of the Author/s</b> | <b>Name of Journal</b>  | <b>ISSN</b> | <b>Link to Website of the Journal</b>   |
|----------------|--|-----------------------------|---|-------------|---|
| 1.             | Health Monitoring of Milling Tool Inserts Using CNN Architectures Trained by Vibration Spectrograms  | Mrs. Sonali S. Patil        | Computer Modelling in Engineering and Sciences                | 1526-1492   | <a href="https://www.techscience.com/journal/CMES">https://www.techscience.com/journal/CMES</a> |
| 2.             | Effects of machining parameters on dry turning operation of Nickel 200 alloy   | Dr. Sachin Mutalikdesai     | International Journal on Interactive Design and Manufacturing | 1955-2513   | <a href="https://www.springer.com/journal/12008">https://www.springer.com/journal/12008</a>     |
| 3.             | Spatio–Temporal Attention based Real-Time Environmental Monitoring Systems for Landslide Monitoring and Prediction                               | Dr. Anjali Joshi            | Spatial Information Research                                  | 2366-3294   | <a href="https://www.springer.com/journal/41324">https://www.springer.com/journal/41324</a>     |
| 4.             | Impact of Variations in Geotechnical Properties of Backfill Material on the Serviceability of Cantilever Earth Retaining Structure: A Case Study | Mr. Atul P. Khatri          | European Chemical bulletin                                    | 2063-5346   | <a href="https://www.eurchembull.com/">https://www.eurchembull.com/</a>                         |
| 5.             | Fusion-Based Representation Learning Model for Multimode User-Generated Social Network Content   | Dr. Anjali Joshi            | Journal of Data and Information Quality                       | 1936-1963   | <a href="https://dl.acm.org/journal/jdiq">https://dl.acm.org/journal/jdiq</a>                   |



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| <b>Sr. No.</b> | <b>Title of Paper</b>   | <b>Name of the Author/s</b> | <b>Name of Journal</b>   | <b>ISSN</b> | <b>Link to Website of the Journal</b>   |
|----------------|---|-----------------------------|--|-------------|---|
| 6.             | A Secure Storage Management & Auditing Scheme for Cloud Storage | Mr. Subhash G. Rathod       | International Journal on Recent and Innovation Trends in Computing and Communication | 2321-8169   | <a href="https://ijritcc.org/index.php/ijritcc">https://ijritcc.org/index.php/ijritcc</a> |
| 7.             | A Secure Storage Management & Auditing Scheme for Cloud Storage | Mr. Ashish K. Bhise         | International Journal on Recent and Innovation Trends in Computing and Communication | 2321-8169   | <a href="https://ijritcc.org/index.php/ijritcc">https://ijritcc.org/index.php/ijritcc</a> |
| 8.             | A Secure Storage Management & Auditing Scheme for Cloud Storage | Mr. Nisar S. Shaikh         | International Journal on Recent and Innovation Trends in Computing and Communication | 2321-8169   | <a href="https://ijritcc.org/index.php/ijritcc">https://ijritcc.org/index.php/ijritcc</a> |
| 9.             | A Secure Storage Management & Auditing Scheme for Cloud Storage | Mr. Yogesh B. Dongare       | International Journal on Recent and Innovation Trends in Computing and Communication | 2321-8169   | <a href="https://ijritcc.org/index.php/ijritcc">https://ijritcc.org/index.php/ijritcc</a> |
| 10.            | A Secure Storage Management & Auditing Scheme for Cloud Storage | Mr. Suhas R. Kothavle       | International Journal on Recent and Innovation Trends in Computing and Communication | 2321-8169   | <a href="https://ijritcc.org/index.php/ijritcc">https://ijritcc.org/index.php/ijritcc</a> |





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|---------|---|--------------------------------|---|-----------|---|
| 11.     | Sub-zero Quasi-static and Fatigue Behaviour of SAE 1040 Automotive Anti-roll Bars in Flexure      | Mr. Amol S. Bhanage            | SAE International Journal of Passenger Vehicle Systems            | 2770-3479 | <a href="https://www.sae.org/publications/collections/content/E-JOURNAL-15">https://www.sae.org/publications/collections/content/E-JOURNAL-15</a>                                   |
| 12.     | Security for Shared Data Over Public Cloud for Maintaining Privacy                                | Mr. S. G. Rathod               | Mathematical Statistician and Engineering Applications            | 2094-0343 | <a href="https://www.philstat.org/index.php/MSEA">https://www.philstat.org/index.php/MSEA</a>   |
| 13.     | Experimentation with Novel Factors Affecting Earth Resistance using Taguchi Method                | Mrs. M. R. Yashwante (Bhosale) | Journal of The Institution of Engineers (India): Series B         | 2250-2106 | <a href="https://link.springer.com/article/10.1007/s40031-023-00856-5">https://link.springer.com/article/10.1007/s40031-023-00856-5</a>   |
| 14.     | An Optimal Design for Grounding Grid Configuration with Unequal Conductor Spacing                 | Mrs. M. R. Yashwante (Bhosale) | Advances in Engineering Software                                  | 1873-5339 | <a href="https://www.sciencedirect.com/science/article/abs/pii/S096599782200268X?via%3Dihub">https://www.sciencedirect.com/science/article/abs/pii/S096599782200268X?via%3Dihub</a> |
| 15.     | A Novel Approach for Grounding Resistance Estimation Approach for Grounding Resistance Estimation | Mrs. M. R. Yashwante (Bhosale) | Indonesian Journal of Electrical Engineering and Computer Science | 2502-4752 | <a href="https://ijeecs.iaescore.com/index.php/IJECS/article/view/28007">https://ijeecs.iaescore.com/index.php/IJECS/article/view/28007</a>   |



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|----------------|--|-----------------------------|--|-------------|---|
| 16.            | Dynamic Soil-Structure Interaction of Multi- Story Buildings using the Finite Element Method and Minimax Probability Machine Regression  | Mr. Saurav Kar              | Engineering, Technology and Applied Science Research | 2241-4487   | <a href="https://www.etasr.com/index.php/ETASR">https://www.etasr.com/index.php/ETASR</a>   |
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| 1.             | Attention Layer-Based Multidimensional Feature Extraction for Diagnosis of Lung Cancer              | Dr. Manisha Bhende          | BioMed Research International               | 2314-6141   | <a href="https://www.hindawi.com/journals/bmri/about/">https://www.hindawi.com/journals/bmri/about/</a> |
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| 7.             | Application of the IoT To Predict the Patient’s Health and Stress Elimination Using Machine Learning Algorithm | Dr. Manisha Bhende          | Journal of Optoelectronics Laser                        | 1005-0086   | <a href="http://gdzjg.org/index.php/JOL">http://gdzjg.org/index.php/JOL</a> |



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| 1.             | Research Perspective on Energy Efficient Protocols in IoT: Emerging Development of Green IoT | Mr. Umakant Tupe            | International Journal of Pervasive Computing and Communications | 1742-7371   | <a href="https://www.emerald.com/insight/publication/issn/1742-7371">https://www.emerald.com/insight/publication/issn/1742-7371</a> |



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| 2.             | Brain Tumor Detection And Segmentation                          | Mrs. S. K. Patil            | International Journal for Research & Development in Technology | 2349-3585   | <a href="https://www.ijrdt.org">https://www.ijrdt.org</a>                     |
| 3.             | Blind Assistant   | Mr. S. G. Rathod            | Studia Rosenthaliana (Journal for the Study of Research)       | 1781-7838   | <a href="https://www.jsrpublication.com/">https://www.jsrpublication.com/</a> |
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| 5.             | Computerized Adaptive Assessment                                | Mr. D. B. Satre             | Journal of Emerging Technologies and Innovative Research       | 2349-5162   | <a href="http://www.jetir.org/">http://www.jetir.org/</a>                     |
| 6.             | Guester based mobile robot controller system                    | Mr. Umakant Tupe            | Studia Rosenthaliana (Journal for the Study of Research)       | 1781-7838   | <a href="https://www.jsrpublication.com/">https://www.jsrpublication.com/</a> |



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| 9.      | An Efficient Approach to Control the Over Speeding of Vehicles                          | Mr. S. A. Agrawal           | Studia Rosenthaliana (Journal for the Study of Research) | 1781-7838 | <a href="https://www.jsrpublication.com/">https://www.jsrpublication.com/</a>   |
| 10.     | Internet Based Room Controller  | Mr. P. V. Deshmukh          | Studia Rosenthaliana (Journal for the Study of Research) | 1781-7838 | <a href="https://www.jsrpublication.com/">https://www.jsrpublication.com/</a>   |
| 11.     | Experimental Investigation of SiO <sub>2</sub> Coating on the Performance of Solar Pane | Mr. Girish L. Allampallewar | Test Engineering and Management                          | 0193-4120 | <a href="http://www.testmagzine.biz/index.php/testmagzine/index">http://www.testmagzine.biz/index.php/testmagzine/index</a>       |
| 12.     | Design and Fabrication of Zero Turn Vehicle   | Mr. R. P. Polas             | Journal of Gujarat Research Society                      | 0374-8588 | <a href="http://www.gujaratresearchsociety.in/index.php/JGRS/index">http://www.gujaratresearchsociety.in/index.php/JGRS/index</a> |



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| 2.             | Decomposition Of the Product of Cycles Based on Degree Partition  | Dr. S. R. Shaikh            | Discussiones Mathematicae Graph Theory                         | 2083-5892   | <a href="https://sciendo.com/journal/DMGT">https://sciendo.com/journal/DMGT</a>                                     |
| 3.             | Factorizations of the Product of Cycles   | Dr. S. R. Shaikh            | AKCE International Journal of Graphs and Combinatorics         | 2543-3474   | <a href="https://www.tandfonline.com/toc/uakc20/current">https://www.tandfonline.com/toc/uakc20/current</a>         |
| 4.             | Review on Social Media Mental Disorder Detection System   | Mr. S. A. Agrawal           | International Journal of Computer Engineering and Applications | 2321-3469   | <a href="https://ijcea.com/">https://ijcea.com/</a>   |
| 5.             | Smart Shoes Navigation  | Mrs. S.K. Patil             | International Journal of Computer Engineering and Applications | 2321-3469   | <a href="https://ijcea.com/">https://ijcea.com/</a>   |





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| 6.      | Interaction with platform Games using Smart Watch   | Mrs. D. J. Bonde     | International Journal of Computer Engineering and Applications | 2321-3469 | <a href="https://ijcea.com/">https://ijcea.com/</a>         |
| 7.      | Smart Electronic wheelchair using Bluetooth Module and IOT  | Mrs. K. S. Surawase  | Journal of Emerging Technologies and Innovative Research       | 2349-5162 | <a href="https://www.jetir.org/">https://www.jetir.org/</a> |
| 8.      | A Survey: Machine Learning Approach for Tracking and Predicting Student Performance in Degree Programs                    | Mr. D. B. Satre      | Journal of Emerging Technologies and Innovative Research       | 2349-5162 | <a href="https://www.jetir.org/">https://www.jetir.org/</a> |
| 9.      | A Parallel System Implementation of Classification and Disease Prediction on Machine Learning from Healthcare Communities | Mr. S. S. Chaudhari  | International Journal of Research and Analytical Reviews       | 2349-5138 | <a href="https://www.ijrar.org/">https://www.ijrar.org/</a> |
| 10.     | Review of Blockchain based Forensics Analysis Secure Node Diagnosis Mechanism of Smart Grid                               | Mr. S. A. Agrawal    | International Journal of Research and Analytical Reviews       | 2349-5138 | <a href="https://www.ijrar.org/">https://www.ijrar.org/</a> |





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| 1       | <a href="#">Health Monitoring of Milling Tool Inserts Using CNN Architectures Trained by Vibration Spectrograms</a>  | Mrs. Sonali S. Patil    | Computer Modelling in Engineering and Sciences                                       | 1526-1492 |
| 2       | <a href="#">Effects of machining parameters on dry turning operation of Nickel 200 alloy</a>   | Dr. Sachin Mutalikdesai | International Journal on Interactive Design and Manufacturing                        | 1955-2513 |
| 3       | <a href="#">Spatio–Temporal Attention based Real-Time Environmental Monitoring Systems for Landslide Monitoring and Prediction</a>                               | Dr. Anjali Joshi        | Spatial Information Research   | 2366-3294 |
| 4       | <a href="#">Impact of Variation in Geotechnical Properties of Backfill Material on the Serviceability of Cantilever Earth Retaining Structure : A Case Study</a> | Mr. Atul P. Khatri      | European Chemical bulletin   | 2063-5346 |
| 5       | <a href="#">Fusion-Based Representation Learning Model for Multimode User-Generated Social Network Content</a>   | Dr. Anjali Joshi        | Journal of Data and Information Quality  | 1936-1963 |
| 6       | <a href="#">A Secure Storage Management &amp; Auditing Scheme for Cloud Storage</a>  | Mr. Subhash G. Rathod   | International Journal on Recent and Innovation Trends in Computing and Communication | 2321-8169 |
| 7       | <a href="#">A Secure Storage Management &amp; Auditing Scheme for Cloud Storage</a>  | Mr. Ashish K. Bhise     | International Journal on Recent and Innovation Trends in Computing and Communication | 2321-8169 |



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| 8       | <a href="#">A Secure Storage Management &amp; Auditing Scheme for Cloud Storage</a>                               | Mr. Nisar S. Shaikh            | International Journal on Recent and Innovation Trends in Computing and Communication | 2321-8169 |
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| 10      | <a href="#">A Secure Storage Management &amp; Auditing Scheme for Cloud Storage</a>                               | Mr. Suhas R. Kothavle          | International Journal on Recent and Innovation Trends in Computing and Communication | 2321-8169 |
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| 7       | <a href="#">Application of the IoT To Predict the Patient’s Health and Stress Elimination Using Machine Learning Algorithm</a> | Dr. Manisha Bhende   | Journal of Optoelectronics Laser                        | 1005-0086 |



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| 8       | <a href="#">Transaction Authentication Using Face Detection And Invisible Keyboard Sequence</a> | Mrs. S. S. Muley     | GIS SCIENCE JOURNAL  | 1869-9391 |



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| 11      | <a href="#">Experimental Investigation of SiO<sub>2</sub> Coating on the Performance of Solar Pane</a> | Mr. Girish L. Allampallewar | Test Engineering and Management                           | 0193-4120 |
| 12      | <a href="#">Design and Fabrication of Zero Turn Vehicle</a>  | Mr. R. P. Polas             | Journal of Gujarat Research Society                       | 0374-8588 |





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**ARTICLE**

# Health Monitoring of Milling Tool Inserts Using CNN Architectures Trained by Vibration Spectrograms

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## ABSTRACT

In-process damage to a cutting tool degrades the surface finish of the job shaped by machining and causes a significant financial loss. This stimulates the need for Tool Condition Monitoring (TCM) to assist detection of failure before it extends to the worse phase. Machine Learning (ML) based TCM has been extensively explored in the last decade. However, most of the research is now directed toward Deep Learning (DL). The “Deep” formulation, hierarchical compositionality, distributed representation and end-to-end learning of Neural Nets need to be explored to create a generalized TCM framework to perform efficiently in a high-noise environment of cross-domain machining. With this motivation, the design of different CNN (Convolutional Neural Network) architectures such as AlexNet, ResNet-50, LeNet-5, and VGG-16 is presented in this paper. Real-time spindle vibrations corresponding to healthy and various faulty configurations of milling cutter were acquired. This data was transformed into the time-frequency domain and further processed by proposed architectures in graphical form, i.e., spectrogram. The model is trained, tested, and validated considering different datasets and showcased promising results.

## KEYWORDS

Milling tool inserts; health monitoring; vibration spectrograms; deep learning; convolutional neural network

## 1 Introduction

In subtractive machining processes, the desired surface finish of a job is achieved by the controlled removal of material [1]. Conventional methods such as turning, milling, and drilling are principally practiced processes in the industry [2]. Most of the research attention has been directed towards the milling process owing to its versatile and wide-ranging applications [3]. Milling is an intermittent cutting operation performed using a controlled cutting tool configured with multiple inserts [4]. Thus, in-process damage to a cutting tool degrades the surface finish of the job shaped by machining and causes a significant financial loss [5]. Therefore, the subject of tool condition monitoring is being persuaded through various approaches, such as diagnostic, prescriptive, predictive, as well as descriptive ones, and has emerged as a field worth investing in view of Industry 4.0 [6]. The predictive approach forecasts the possible failure of a cutting tool based on historic data and is helpful in preventive maintenance [7]. Most of the study is inclined toward the prediction of tool wear through the





# Effects of machining parameters on dry turning operation of Nickel 200 alloy

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## Abstract

Dry machining without cutting fluid is becoming increasingly popular, considering the environmental and health problems related to their use in conventional machining. Nickel 200 alloy material is highly corrosion-resistant with alkaline salt and neutral solutions, and aerospace and chemical processing industries use it. The main aim of this work is to investigate the effect of the turning parameters such as spindle speed, feed rate, and depth of cut on surface roughness, material removal rate, force, and temperature in dry turning operation on Nickel alloy 200 with Carbide CA6515 tool material. The design of Experiment (DOE) concept was utilized to plan the experimental runs via full factorial design. The response surface methodology is used to conduct the experiments with three levels of independent variables: spindle speed, feed rate, and depth of cut. The significant independent variable and interactions of independent variables are identified through the ANOVA table. Consequently, the relationship between independent and dependent variables is framed with regression analysis. Surface roughness and the rate of material removal in the machining of Nickel 200 alloy are affected by the spindle speed and depth of cut. The surface roughness value is the smallest when the federate level and the depth of cut are both minimal. Finally, the developed regression models were validated with experimental results. The validation results show that the developed regression models found good agreement with experimental results.

**Keywords** Turning operation · Dry machining · Nickel alloy 200 · Carbide CA6515 · Response surface methodology · Regression analysis

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## 1 Introduction

Nickel 200 alloy has high resistance to normal and distilled waters and has wide applications in the food-processing industry. It is used for handling and transporting chemicals due to its corrosion resistance property. It can also be used for certain aerospace components; cylindrical parts are produced from turning operations [1]. In the turning operation,

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# Spatio-temporal attention based real-time environmental monitoring systems for landslide monitoring and prediction

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## Abstract

Due to their intense concealment and tremendous destructiveness during the course of their lengthy growth, landslides are difficult to monitor. Landslide data gathering exhibits traits such as incomplete local data, unbalanced data sampling, and dynamic changes in monitoring points, which obstructs research on landslide prevention and control and introduces new needs for data collection and analysis. This article proposes a spatiotemporal attention-based Kriging interpolation approach (STAK) based on the conventional Kriging method. Three key sections make up the model: Create a graph and specify the adjacency relationship at various levels, then build a spatial-temporal mask matrix so that the model can incorporate spatial-temporal information, and finally combine ordinary kriging and a multi-head attention network to perform interpolation and correction for missing data. This study compares many frequently used interpolation methods in order to reflect the properties and performance of the STAK model, namely: Ordinary Kriging, KPMF algorithm and kNN algorithm. This methodology has some universality and may be used to tackle any spatiotemporal graph network interpolation problem, such as predicting urban traffic flow. It can also address the issue of incomplete and unequal features brought on by different sensor failures or economic factors.

**Keywords** Environmental monitoring · Context-aware intelligent landslide data · Spatiotemporal · Discrete multi-head attention · Kriging interpolation method

## 1 Introduction

A landslide is one of the most common geological disasters in the world. It refers to a natural phenomenon in which rock and soil move integrally along a certain direction

under the action of gravity construction and other human factors. The first item on our list is an avalanche, which is characterized as any sizable amount of snow that is sliding, falling, or flowing. Given that they can also contain stones and other debris, avalanches might be considered a

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# IMPACT OF VARIATIONS IN GEOTECHNICAL PROPERTIES OF BACKFILL MATERIAL ON THE SERVICEABILITY OF CANTILEVER EARTH RETAINING STRUCTURE: A CASE STUDY

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## Abstract

Landslides are major natural disasters. It affects the ecosystem and results in economic loss. The Konkan region of Maharashtra, India, also experiences this problem every year. To prevent such disasters Slope stabilisation techniques are used, among which the retaining Structure provision is one of them. Most of the time, permanent RCC earth-retaining structures (ERS) is provided. These structures are constructed for a total serviceability period of 30–60 years but generally, in most of the cases in lateritic soil, they cannot withstand their total serviceable life. To find out the reasons for failure and to increase serviceability, a detailed investigative study of engineering geological and geotechnical properties was conducted to assess the serviceability or structural safety of cantilever earth retaining walls at Dasgaon and Sahilnagar from Mahad Tehsil, Konkan region, Maharashtra, and the preventive Measures resulting from the failure of cantilever ERS are discussed.

**Key words:** Earth retaining structure, lateritic soil, failure, serviceability, structural safety, preventive measures.

# Fusion-Based Representation Learning Model for Multimode User-Generated Social Network Content

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As mobile networks and APPs are developed, user-generated content (UGC), which includes multi-source heterogeneous data like user reviews, tags, scores, images, and videos, has become an essential basis for improving the quality of personalized services. Due to the multi-source heterogeneous nature of the data, big data fusion offers both promise and drawbacks. With the rise of mobile networks and applications, user-generated content (UGC), which includes multi-source heterogeneous data including ratings, marks, scores, images, and videos, has gained importance. This information is very important for improving the calibre of customized services. The key to the application's success is representational learning of fusing and vectorization on the multi-source heterogeneous UGC. Multi-source text fusion and representation learning have become the key to its application. In this regard, a fusion representation learning for multi-source text and image is proposed. The convolutional fusion technique, in contrast to splicing and fusion, may take into consideration the varied data characteristics in each size. This research proposes a new data feature fusion strategy based on the convolution operation, which was inspired by the convolutional neural network. Using Doc2vec and LDA model, the vectorized representation of multi-source text is given, and the deep convolutional network is used to obtain. Finally, the proposed algorithm is applied to Amazon's commodity data set containing UGC content based on the classification accuracy of UGC vectorized representation items and shows the feasibility and impact of the proposed algorithm.

**Keywords:** User-Generated Content, Social Networks, Vectorization, Fusion Mechanism

## 1 INTRODUCTION

All APPs have evolved into essential tools for life and business thanks to specialized services. Users of APPs will produce a significant amount of instant communication data, as well as dynamically changing text comments and ratings, Labels, images and videos, and other significant amounts of data [1]. Users now actively create data thanks to current network technology, which has resulted in a vast volume of User Generated Content (UGC), which is now a sector of personalized services. A significant application-valued data component. The description and assessment of the same object by several persons from various perspectives is a reflection of the multi-source heterogeneous qualities of UGC data that incorporates individualized user information. There are several types of data provided (including text, image, video, etc.) [2]. The current customized service sector has received a lot of attention regarding how to implement effective, tailored searches

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# A Secure Storage Management & Auditing Scheme for Cloud Storage

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**Abstract**— Cloud computing is an evolving domain that provides many on-demand services that are used by many businesses on daily basis. Massive growth in cloud storage results in new data centers which are hosted by a large number of servers. As number of data centers increases enormous amount of energy consumption also increases. Now cloud service providers are looking for environmental friendly alternatives to reduce energy consumption. Data storage requires huge amount of resources and management. Due to increasing amount of demand for data storage new frameworks needed to store and manage data at a low cost. Also to prevent data from unauthorized access cloud service provider must provide data access control. Data access control is an effective way to ensure data storage security within cloud. For data storage cost minimization we are using DCT compression technique to ensure data compression without compromising the quality of the data. For data access control and security asymmetric cryptographic algorithm RSA is used. For data auditing we have used MD5 with RSA to generate digital signatures, In proposed work we tried to cover all attributes in terms of efficiency, performance and security in cloud computing.

**Keywords** – Cloud Computing, Cloud Storage, Resource Consumption, Data Access Control, Data Security, Data Privacy.

## I. INTRODUCTION

Cloud computing domain is the fastest developing business model that provides on demand resources such as data storage, business software's such as zoom, Email, Skype. Many Businesses can take advantage of the various cloud services remotely and access their personal data on any device. Cloud computing is the fastest growing technology that is gaining popularity day by day. Cloud computing allows users to access applications and data stored on remote servers, rather than on their own local computer. This means that users can access their data and applications from any device with an internet connection, without having to install the software or store the data on their own device. Cloud computing also allows for more efficient use of resources, as multiple users can access the same application or data simultaneously.

Additionally, cloud computing can provide cost savings by reducing the need for hardware and software [4][6][21].

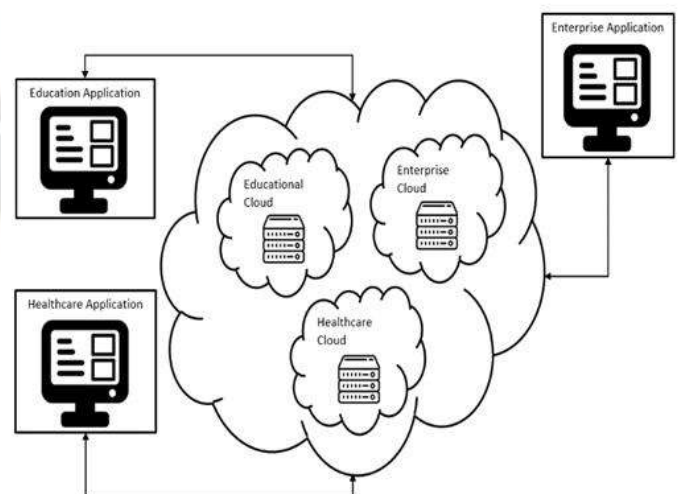


Figure 1.1 Cloud Platforms & Storage Model



# Sub-zero Quasi-static and Fatigue Behavior of SAE 1040 Automotive Anti-roll Bars in Flexure

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## Abstract

The objective of the study was to evaluate the quasi-static and fatigue performance of automotive anti-roll bars (ARBs) under extreme environmental conditions. Flexural quasi-static and fatigue tests of SAE 1040 steel were conducted above and below the ductile-to-brittle transition temperature (DBTT) in flexure and compared with their room temperature performance. The flexural strength increased by decreasing the temperature to  $-40^{\circ}\text{C}$ . The fatigue lives are determined for stress levels of 87%, 60%, and 30% of their flexural strength under displacement mode in constant amplitude loading. Experimental stress versus the number of cycles (S-N) curves of SAE 1040 steel state that all tube specimens have fatigue limits that were more than 100,000 cycles at  $-40^{\circ}\text{C}$ . The fatigue life of the SAE 1040 tube exhibited infinite life below the ductile-to-brittle transition (DBT). The finite element (FE) model of ARB was used to determine the quasi-static strength, as well as in the calculation of fatigue analysis. The FE fatigue life predictions of all stress levels match the experimental results. Fractography of failed specimens revealed cleavage fractures resembling river patterns at  $-40^{\circ}\text{C}$ , followed by the fine steps feather marking, tear ridges, decohesion, transgranular fractures, etc. in subsequent DBTTs, i.e.,  $-30^{\circ}\text{C}$  to  $+10^{\circ}\text{C}$  of quasi-static testing. The flexural fatigue fracture surface analysis showed that the mechanisms at  $-40^{\circ}\text{C}$  were quite distinct, involving transgranular cracks with dislocation strengthening.

## History

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# Security for Shared Data Over Public Cloud for Maintaining Privacy

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## Abstract

Currently, outsourcing of data to remote cloud is increasing day by day, People are outsourcing their data at Cloud Service Provider (CSP) who are offering vast amount of storage space with low cost which is minimizing the maintenance and burden of local data storage but once data goes into cloud user lose control over their data which brings new security risk. Data storage cost, access restriction and maintaining the integrity of data is a major concern in cloud security. Many organizations do not trust cloud providers to store their confidential data in public cloud storage because of security threats. The solution to the problem is given by different researchers in their work. However, the work in this regard has not achieved all security aspects correctly. The solution to the problem is given by different researchers in their work. However, the work in this regard has not achieved all security aspects correctly. To improve the correctness and performance of data security on the cloud while transferring the file is discussed in detail. While processing users request different attributes are checked for the processing of data. Each state is strictly defined with the attributes over the access.

**Keywords:** - Data Storage Cost, Cloud Security, Cloud Service Provider (CSP)

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## Introduction

In today's world cloud is the major trend for data storage in a distributed way to overcome the usage cost. The typical system uses heavy charges to use the data and store data in their physical locations. The cloud computing an approach which stores the data virtually in the storage system. This helps the user to avoid the storage space and they can use at anytime from anywhere. The cloud also helps to work efficiently for certain data access from multiple stations. The complexity of data storage is decreasing as researchers work on it. The services provided by the different organizations for data storing is easy with the cloud [8].

Cloud computing is the system where loosely coupled data is used but the organization should know the correctness of the use, the data correctness is the highest priority for any organization. In a system different authorized users have been allowed to access cloud storage but everyone has some restrictions. The system should work efficiently but the access control is managed by the system administrator. The personal data security is a major concern while transfer or store



# Experimentation with Novel Factors Affecting Earth Resistance Using Taguchi Method

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**Abstract** Earthing is a low-resistance bypass mechanism used to protect personnel and equipment. The earth electrode, soil resistivity, and electrode-to-soil contact resistance are the main determinants of earth resistance. There are both controllable and uncontrollable subfactors for each of these major components. In the presence of some uncontrollable elements, it is imperative to reduce earth resistance by combining controllable factors. This paper examines the effects of simple and underutilized but effective factors like charcoal size, length/diameter ratio of cone type electrodes, and metal scrap addition on earth resistance. Method of design of experiments, Taguchi is a method for estimating effect. The Taguchi approach examines the impact of various degrees of variables on earth resistivity. The most crucial factor to consider is the cone's length to diameter ratio. Following that is the particle size of the charcoal utilized in the earthing pit. Metal scrap had the smallest impact of all the variables.

**Keywords** Earthing · Cone shaped electrode · Charcoal · Taguchi

## Introduction

The safety of persons and instruments must not be jeopardized; earthing is one of the most crucial safety procedures. Electrical engineering's field of earthing is well developed. On the other hand, natural and man-made changes are influencing earthing design and related variables. Every aspect of power generation, transmission, and, most crucially, utilization has been changed by technology. Seasonal changes, as well as soil composition, show the impact on the ecosystem. The natural soil layer has been degraded due to overcrowding. The rate of population increase has been so tremendous that available land is nearly depleted. Dense populations leave little room for earthing. Significant modifications in earthing methodology are being caused by soil pollution. With the advancement of digital electronics and automation, the usage of sensitive instrumentation is becoming increasingly frequent. For such instruments, earthing is required. The earthing process and many of its components, from design to commissioning, must be reviewed in light of all these developments.

The main benefit of earthing is that it creates a low-resistance path. Earth electrodes and soil conditions around earth electrodes have been extensively studied as contributors to lower earth resistance. [1, 2]. Various subfactors are being tested to reduce earth resistance. The electrode's material, depth in the soil, shape, and even a parallel connection can all help to reduce earth resistance. Contact resistance is reduced due to the close contact between the soil and the earth electrode configuration. Various methods for modifying soil resistivity have been used for a long time [3–8]. Because of differences in local soil conditions, the methods have limitations. When the soil is rocky, increasing the depth of the electrode is not possible. Parallel electrode connections will necessitate a large area to avoid

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# An optimal design for grounding grid configuration with unequal conductor spacing

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## ABSTRACT

The earthing system is considered as a very important aspect of electrical power system in terms of reliability, dependency and safety. Carrying the fault current and ensuring the safety of the operator and the equipment are the two fundamental requirements of an electrical earthing system. Moreover, by modifying the grid configuration or by reducing the earth fault current, the performance can be improved. Normally the reduction of fault current may cause changes in grid shape and size by changing the conductor spacing, grid dimensions, conductor length, grid depth and adding vertical grounding rods. A square and rectangular grid, buried in two-layer soil model is considered with unequal spaced grounding grid. This paper aims to ascertain the ideal grounding grid configuration about safety factors such as Ground Potential Rise (GPR), earthing grid resistance, touch as well as step voltages. Moreover, a square and rectangular grid, buried in a two-layer soil model are considered with Unequal Conductor Spacing. For developing an effective and economic square and rectangular earthing system for the unequally spaced design, a mathematical cost function (CF) is presented along with the modern computational intelligent technique. Hence, a Modified Harris Hawks Optimizer (MHHO) technique was proposed which is the conceptual improvement of the standard Harris Hawks Optimizer (HHO). Accordingly, the cost obtained by the proposed MHHO technique is 8.19%, 9.6%, 3.44%, 11.1% and 2.43% which is lower than other existing methods like PSO, GA, FF, HHO, MOPSO at 60<sup>th</sup> iteration, for population size 10.

## 1. Introduction

A good grounding system is the most significant safeguard for the substation's safety. The need for a grounding system is to supply a neutral point which should be highly safe for all equipment of the substation/industry. Furthermore, it has to ensure the discharge path at the time of lightning, faults, or during the high voltage switching-related surges that helps to provide better personnel safety by reducing the unsafe potential gradients which prevail inside the substation/industry [1]. Thus, the necessity of an electrical earthing system relies not on just in moving the faulty current toward the earth, yet it has to guarantee the operator's safety and equipment [2,3]. Under normal and fault situations, a safe grounding design can transfer electric currents into the earth without going overboard under operational and equipment restrictions [4]. The ground grid is constructed by interconnecting horizontal bare conductors and ground rods. The designs of the ground grid

[5,6] control the voltage level to a safe value and provide a safe system with economic cost. Moreover, the performance of the grounding grid relies upon the structure of the soil and the configuration of the grid [7] and it can be evaluated by several parameters, like earthing grid resistance, touch potential, step potential and GPR [8]. Because of more ground rods, the overall length of the conductors in the earth grows as the step and mesh potentials decrease. Therefore, ground rods are regarded as the most efficient method for lowering resistance, actual mesh and step voltages [9–11]. To expedite the optimization process, several heuristic techniques are designed and produce an efficient and effective earthing grid system with minimum cost function [12–16].

The demand for grounding grids can be enhanced further by altering the configuration of the grid or by decreasing the faulty current towards the earth. Normally, lowering the earth fault current is a challenging task. As a result, the mesh is changed and vertical grounding rods are added to the configuration [17–19]. The unequally spaced grid saves around 34% of the material used in the grounding grid and the

*Abbreviations:* RIP, Rotary Inverted Pendulum.

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## A novel approach for grounding resistance estimation

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### ABSTRACT

Grounding is crucial to achieving equipment and personnel protection. This paper presents input-output pair-based modeling using the response surface method and artificial neural network to predict earth resistance for novel factors associated with grounding. The effect of various types of cone-shaped earth electrodes, charcoal size, and industrial waste metal fibers on earth resistance is investigated for the first time. The experimental trials are carried out in a scaled down manner. Artificial neural network and response surface method are used as investigatory tool for parametric variation. Artificial neural network model predicts earth resistance with more accuracy as compared to response surface method. These methods are found to be very effective in prediction of earth resistance of grounding system which is complex in nature.

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## 1. INTRODUCTION

Grounding is used to keep people and instruments safe. Low earth resistance is required for good grounding. The grounding electrode and the soil conditions around it are critical. Natural and man-made changes have had an impact on the factors influencing grounding resistance. Seasonal patterns are shifting, and their impact on grounding is palpable. The population is growing, and so is the rate of concretization. Because of changes in soil, grounding methodology has changed dramatically. Automation necessitates a lower grounding resistance. As a result of these developments, the grounding approach, and many components of grounding, from construction to commissioning, must be reexamined. Different strategies for achieving lower earth resistance are the subject of a research. The primary function of grounding is to provide path of low electrical resistance. Ground electrode and soil conditions around ground electrode are the major contributors to lower grounding resistance which have been extensively studied [1].

Various subfactors of these to reduce grounding resistance have been tried by many researchers. Electrode's parameters like material, depth in soil, shape and parallel connection have been altered to lower grounding resistance [2]–[7]. Contact between soil and electrode structure aids in lowering grounding resistance. Since a long time, various methods have been used to alter soil resistivity [8]–[11]. As soil improvers, a variety of materials have been introduced. These materials are classified into two types: organic and inorganic. An organic enhancement material is typically made of natural materials, whereas a chemical product is made of inorganic materials. Natural materials have seen an increase in demand in recent past. This is due to the abundance of raw materials which are inexpensive. In the early 1980s, Jones [12] proposed bentonite rods as a soil improver. In his experiment, Bentonite rods were field tested against driven rods at

# Dynamic Soil-Structure Interaction of Multi-Story Buildings using the Finite Element Method and Minimax Probability Machine Regression

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## ABSTRACT

Soil-Structure Interaction (SSI) issues are some of the most critical problems encountered in the design of structures prone to earthquake shaking. The damage caused by an earthquake mainly depends on the interaction between soil and structure. In this study, the effect of dynamic SSI on a multi-story building is examined using two methods, Finite Element Method (FEM) and Minimax Probability Machine Regression (MPMR). The MPMR was used to develop a model based on the input and output database generated from the FEM model. The performance comparison of these two models shows a good correlation. The MPMR model significantly reduced the computational time and can thus be utilized as a substitute for determining the response quantities.

**Keywords-dynamic SSI; earthquake; FEM; MPMR**

## I. INTRODUCTION

Soil-Structure Interaction (SSI) becomes very crucial when massive and stiff structures are built on soft soil. Structures may be subjected to dynamic loads arising due to various natural or manmade sources (e.g. blasting, machine operations, quarrying, construction activities, action of water waves, earthquakes, etc.), out of which earthquake is the most important hazard to the structure and foundation. The damage caused by an earthquake mainly depends on the dynamic response of the soil layers [1]. In many cases, the damage caused is not due to the sole structural failure or sole soil failure, but it is due to the interaction between the soil and the structure. The properties of the soil vary from one place to another or along the direction (vertical or horizontal) [2-4].

Thus, in severe soil conditions, the interaction effects should be considered for the dynamic analysis of the structures built on the soil. The general structural dynamic system has mainly two characteristic differences from the SSI system which are the non-linear characteristics of the soil [5] and the unbounded nature of the soil medium [6]. The radiation damping, which is the radiation of energy towards infinity, is the most important characteristic in an unbounded soil medium and it is not experienced in a bounded soil medium.

Many studies have considered the effects of SSI on the dynamic behavior of the structures. Authors in [7] analyzed the effect of SSI on three-dimensional building distribution resting on a layered elastic-half-space. Authors in [8] proposed a simple relation to estimate the expected efficiency of the SSI



# Quasi-Static and Fatigue Reliability Analysis of C45 Automotive Leaf Spring Beam Under Flexural Loads in Sub-Zero Temperature

Amol Bhanage · K. Padmanabhan

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**Abstract** Automobile suspension systems use leaf springs, which are responsible for driving comfort and performance. The failure of leaf springs can lead to an accident. In an arctic environment, leaf springs must meet the durability requirements under service loading. From this point of view, quasi-static and fatigue experiments and numerical studies have been done on leaf springs in sub-zero temperature conditions and at room temperatures. In experimental studies, the leaf spring has been used as a beam specimen. Experimental study demonstrates flexural tests on C45 steel beam specimens at room temperature (25 °C) and sub-zero temperature of  $-40$  °C. The flexural strength of C45 steel is increased at sub-zero temperature in 35.56%. The next step is to perform flexural fatigue testing in displacement control mode under constant amplitude loading conditions. The fatigue life of leaf springs is improved in sub-zero temperature conditioning, after the ductile-to-brittle transition temperatures of selected material. Static and fatigue finite element simulation was carried out with test results to find out the flexural strength and fatigue life of leaf springs. SEM fractography of failed specimens provides insight into the fracture phenomena in C45 beam under quasi-static and fatigue loads.

**Keywords** Leaf spring · C45 steel · Quasi-static flexure · Flexural fatigue · Ductile-to-brittle transition (DBT)

## Introduction

The leaf springs of automotive suspension systems [1] are fabricated from steel and composite materials [2]. Mechanical behavior of these materials, such as their static and fatigue properties [3], at sub-zero temperatures and after the ductile-to-brittle transition (DBT), poses the greatest challenges. This study aims to demonstrate the influence of sub-zero temperature environmental conditions on fatigue and to explore the mechanism of steel leaf spring under cyclic loading. To achieve this objective, in a first part, quasi-static testing is performed on steel material at a room and a sub-zero temperature of  $-40$  °C. In a second, flexural fatigue tests are carried out at room and sub-zero temperature of  $-40$  °C to study the static and fatigue mechanism before and after the ductile-to-brittle transition temperature. The automobile structures under cyclic loading are broken earlier due to the effect of environmental temperatures, where fatigue cracks initiate early and lead to failure. It also affects fatigue limits. An exposure to sub-zero temperatures occurs in automotive in arctic environments. The low and high extremes of temperature and active atmosphere can affect fatigue crack growth. As their use in arctic regions continues to grow, the characteristics and performance of automotive steel in temperatures ranging from  $-40$  to  $80$  °C become increasingly crucial [4].

Brittle fractures in automotive industries are not common, but when they do occur, they cause sudden, catastrophic failures. In cold environments, the awareness of brittle fracture is important. In metals, ductile fracture is the most common type of failure at room temperature. It results in a favorable combination of strength and toughness in which significant plastic deformation precedes

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# Quasi-Static and Fatigue Reliability of Glass/Epoxy Composite Automotive Leaf Spring Beams Under Flexural Loads at Sub-Zero Temperatures

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**Abstract** Leaf springs play an integral role in suspension elements of SUVs for reducing impact and irregular loads, ensuring safety, and comfortable ride. In this study, the glass fabric/epoxy (GF/E) composite leaf spring beams are experimentally tested above and below the ductile-to-brittle transition (DBT) temperatures. The quasi-static and fatigue experiments are carried out at +25 °C room temperature (above DBT) and at -40 °C sub-zero temperature below DBT. The flexural strength of GF/E composite is increased by 18% at -40 °C sub-zero conditioning. The displacement-based flexural fatigue testing is conducted at fatigue load ratios of 83, 67, and 33%, respectively, for above and below DBT temperatures. At sub-zero temperatures (SZTs), fatigue cycles were observed to be 57,200, 78,650, and 100,000 at 83, 67, and 33% which were much better than those at room temperature. The fatigue performance was improved in SZTs conditioning. Finite element analysis carried out using ANSYS shows good correlation with test results. The failure mechanisms are studied through SEM, and it is observed that, the interface influence is imperative at SZTs which depicts the improved structural integrity and durability. Increased glass transition temperature and restricted chain mobility of epoxy matrix influence quasi-static strength, fatigue life and failure mechanisms.

**Keywords** Leaf spring beam · Glass/epoxy composite · Quasi-static flexure · Flexural fatigue · Ductile-to-brittle transition (DBT) · Fractography

## Introduction

Leaf springs are crucial suspension elements in SUVs since they absorb irregular loads and reduce impact and vertical vibrations. It plays an imperative role in ensuring safety and a comfortable ride [1]. The failure of leaf springs can cause severe accidents. The feasibility of leaf springs is evaluated by bench and road tests. In bench testing, a mono-leaf spring was tested using a three-point bend fixture, and in road testing, multi-axial leaf springs were evaluated under extreme road conditions [2]. Leaf spring performance is highly dependent upon material properties as impacted by processing, the magnitude and stability of residual stresses, and service loading environments [3].

The use of polymer matrix composite materials for leaf spring fabrication can be effective in reducing the weight and fuel consumption of lightweight vehicles [4]. In the automotive industry, fiber-reinforced composite leaf springs are gaining popularity in place of steel springs [5]. In comparison with metallic leaf springs, the glass fiber-reinforced composite multi-leaf spring exhibited a weight reduction of 57.23% [6]. Composite multi-leaf springs have less stress (67.35%), higher stiffness (64.95%), higher natural frequencies (126.98%), as well as better ride comfort than multi-steel leaf springs [7]. In many vehicles, these metallic multi- or mono-leaf springs are often substituted with a mono composite leaf spring [8]. The polymer matrix gets stiffer, stronger, and less ductile when the temperature is lowered. These polymer matrix composites exhibit increased elastic modulus, tensile strength, and flexural strength at SZTs. In contrast, it decreases ductility, which has a negative impact on impact resistance, fracture toughness, and failure strain [9, 10]. At low temperatures, in tensile and compressive loading, the failures

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## Research Article

# Attention Layer-Based Multidimensional Feature Extraction for Diagnosis of Lung Cancer

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At present, early lung cancer screening is mainly based on radiologists' experience in diagnosing benign and malignant pulmonary nodules by lung CT images. On the other hand, intraoperative rapid freezing pathology needs to analyse the invasive adenocarcinoma nodules with the worst recovery in adenocarcinoma. Moreover, rapid freezing pathology has a low diagnostic accuracy for small-diameter nodules. Because of the above problems, an algorithm for diagnosing invasive adenocarcinoma nodules in ground-glass pulmonary nodules is based on CT images. According to the nodule space information and plane features, sample data of different dimensions are designed, namely, 3D space and 2D plane feature samples. The network structure is designed based on the attention mechanism and residual learning unit; 2D and 3D neural networks are along built. By fusing the feature vectors extracted from networks of different dimensions, the diagnosis results of invasive adenocarcinoma nodules are finally obtained. The algorithm was studied on 1760 ground-glass nodules with 5-20 mm diameter collected from a city chest hospital with surgical and pathological results. There were 340 nodules with invasive adenocarcinoma and 340 with noninvasive adenocarcinoma. A total of 1420 invasive nodule samples were cross-validated on this example dataset. The classification accuracy of the algorithm was 82.7%, the sensitivity was 82.9%, and the specificity was 82.6%.

## 1. Introduction

Lung cancer has recently emerged as a malignancy that poses a major threat to human health as one of its symptoms [1]. When opposed to other tumors, lung cancer has no symptoms in the early stages. Many patients have progressed to the point where they are inoperable or have metastasized, and patients in the middle and late stages have poor surgical outcomes [2, 3]. Lung cancer screening with low-dose helical CT is critical for early diagnosis of lung cancer, with reliable diagnostic results increasing the likelihood of a patient's capacity to be cured [4]. According to the statistics of the NLST study in the United States, in the lungs with suspected

imaging in 20% of cancer cases, the final surgical pathology is not lung cancer. For lung adenocarcinoma, its subpathological type dramatically affects the surgical approach. The surgical medium-fast frozen pathology is accurate in diagnosing whether small diameter tumors are invasive, and the accuracy rate is low [5]. Therefore, for early lung cancer nodules with similar shape characteristics, the diagnosis of subpathological type of nodules, tiny nodules of lung adenocarcinoma, is based only on subjective diagnosis by radiologists which will have certain limitations and preoperative. The ability to more accurately confirm the subpathological type is also essential for the formulation of the surgical plan to have greater significance.

## Research Article

# Classification of Bioinformatics EEG Data Signals to Identify Depressed Brain State Using CNN Model

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Patients suffering from severe depression may be precisely assessed using online EEG categorization and their progress tracked over time, minimizing the risk of danger and suicide. Online EEG categorization systems, on the other hand, suffer additional challenges in the absence of empirical oversight. A lack of effective decoupling between brain regions and neural networks occurs during brain disease attacks, resulting in EEG data with poor signal intensity, high noise, and nonstationary characteristics. CNN employs momentum SGD optimization. By using a tiny momentum decay factor, the literature's starting strategy, and the same batch normalization, this work attempts to decrease model error. Before being utilized to form a training set, samples are shuffled, followed by validation and testing on the new samples in the set. An online EEG categorization system driven by a convolution neural network has been developed to do this. The approach is applied directly to the EEG input and is able to accurately and quickly identify depressed states without the need for preprocessing or feature extraction. The healthy control group and the depression control group had accuracy, sensitivity, and specificity of 99.08 percent, 98.77 percent, and 99.42 percent, respectively, in experiments on depression evaluation based on publicly accessible data. The machine learning technique based on feature extraction is often getting more and more complex, making it only suited for offline EEG categorization. While neural networks have become increasingly important in the study of artificial intelligence in recent years, they are still essentially black-box function approximations with limited interpretability. In addition, quantitative study of the neural network shows that depressed patients and healthy persons have remarkable dissimilarity between the right and left temporal lobe brain regions.

## 1. Introduction

Online EEG categorization has thrived as a critical component of brain health services for remote monitoring and assessment of brain illnesses such as epilepsy [1] and depression (MDD) [2]. Accurate evaluation of the brain's health and early surveillance of its growth can help limit the risk of danger [3]. EEGs are typically intense noise and nonsta-

tionary activity, and their accurate classification remains a critical issue [4]. It has been involved in two areas of study for decades: (1) preprocessing and (2) extraction of features. Preprocessing is used to reduce noise and false inverses from electroencephalogram (EEG) recordings. The electroencephalogram categorization has long been the focus of neuroscience research and therapeutic treatment. Machine learning approaches have risen in popularity over the years, and the

## Research Article

# Deep Learning-Based Real-Time Discriminate Correlation Analysis for Breast Cancer Detection

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Breast cancer is the most common cancer in women, and the breast mass recognition model can effectively assist doctors in clinical diagnosis. However, the scarcity of medical image samples makes the recognition model prone to overfitting. A breast mass recognition model integrated with deep pathological information mining is proposed: constructing a sample selection strategy, screening high-quality samples across different mammography image datasets, and dealing with the scarcity of medical image samples from the perspective of data enhancement; mining the pathology contained in limited labeled models from shallow to deep information; and dealing with the shortage of medical image samples from the perspective of feature optimization. The multiview effective region gene optimization (MvERGS) algorithm is designed to refine the original image features, improve the feature discriminate and compress the feature dimension, better match the number of samples, and perform discriminate correlation analysis (DCA) on the advanced new features; in-depth cross-modal correlation between heterogeneous elements, that is, the deep pathological information, can be mined to describe the breast mass lesion area accurately. Based on deep pathological information and traditional classifiers, an efficient breast mass recognition model is trained to complete the classification of mammography images. Experiments show that the key technical indicators of the recognition model, including accuracy and AUC, are better than the mainstream baselines, and the overfitting problem caused by the scarcity of samples is alleviated.

## 1. Introduction

Authoritative reports show that breast cancer is the most common cancer in women and the second most deadly disease [1]. Therefore, breast lumps are a worrying breast abnormality, and about 90% of breast lumps are cancerous. Breast lumps are primarily hidden in breast tissue with unclear edges. Therefore, doctors must combine solid professional knowledge and rich diagnostic experience to complete accurate manual screening. However, doctors' diagnostic

level is uneven, and manual screening is cumbersome and subjective, which can easily lead to a high rate of misdiagnosis or missed diagnosis. The computer-aided breast mass recognition model can effectively assist doctors in clinical diagnosis. However, as we all know, the vast majority of medical image processing applications are faced with the problem of sample scarcity. The main factors that cause this problem are as follows: (1) the cost of labeling medical images is too high, and it takes a lot of human resources and material resources to obtain a certain amount of high-quality samples;

## Research Article

# Identification and Classification of Depressed Mental State for End-User over Social Media

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In researching social network data and depression, it is often necessary to manually label depressed and non-depressed users, which is time-consuming and labor-intensive. The aim of this study is that it explores the relationship between social network data and depression. It can also contribute to detecting and identifying depression. Through collecting and analyzing college students' microblog social data, a preliminary screening algorithm for college students' suspected depression microblogs based on depression keywords, and semantic expansion is researched; a comprehensive lexical grammar was proposed. This research provided has a preliminary screening method based on depression keywords and semantic expansion for college students' suspected depression microblogs, with a screening accuracy. This method forms a depression keyword table by constructing the basic keyword table and the semantic expansion based on the word embedding learning model Word2Vec. Finally, the word table is used to calculate the semantic similarity of the tested microblogs and then identify whether it is a suspected depression microblog. The experimental results on the microblog dataset of college students show that the comprehensive lexical method is better than the SDS questionnaire segmentation method and the expert lexical method in terms of screening accuracy; the comprehensive lexical approach can quickly and automatically screen out a tiny proportion of suspected doubts from a large number of college students' microblogs. Depression Weibo can reduce the workload of experts' annotation, improve annotation efficiency, and provide a suitable data processing basis for the subsequent accurate identification (classification problem) of patients with depression.

## 1. Introduction

Statistics show that there are more than 340 million depression patients in various countries globally and 10 million to 20 million people are suicidal every year [1]. According to the statistics of the Chinese Ministry of Health [2], as of 2012, there were at least 30 million medical records for depression in my country. As a unique group with less social experience, low psychological endurance, and multiple

responsibilities for the future family and society, college students have a significantly higher incidence of depression than other groups [3]. The proposed work plays a key role to explore the relationship between social network data and depression. It also contributes to detecting and identifying depression through collecting and analyzing college student's microblog social data.

A survey [4] shows that the penetration rate of Weibo among college students is as high as 90%. Their personality

## Research Article

# Integrating Multiclass Light Weighted BiLSTM Model for Classifying Negative Emotions

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With the continuous development of social networks, Weibo has become an essential platform for people to share their opinions and feelings in daily life. Analysis of users' emotional tendencies can be effectively applied to public opinion control, public opinion surveys, and product recommendations. However, the traditional deep learning algorithm often needs a large amount of data to be retained to obtain a better accuracy when faced with new work tasks. Given this situation, a multiclassification method of microblog negative sentiment based on MAML (model-agnostic metalearning) and BiLSTM (bidirectional extended short-term memory network) is proposed to represent the microblog text word vectorization and the combination of MAML and BiLSTM is constructed. The model of BiLSTM realizes the classification of negative emotions on Weibo and updates the parameters through machine gradient descent; the metalearner in MAML calculates the sum of the losses of multiple pieces of training, performs a second gradient descent, and updates the metalearner parameters. The updated metalearner can quickly iterate when faced with a new Weibo negative sentiment classification task. The experimental results show that compared with the prepopular model, on the Weibo negative sentiment dataset, the precision rate, recall rate, and F1 value are increased by 1.68 percentage points, 2.86 percentage points, and 2.27 percentage points, respectively.

## 1. Introduction

Artificial intelligence is a subclass of data science that aims to develop smart computers capable of doing a wide range of tasks, which would ordinarily normally require human comprehension. These intelligent devices can reflect on their prior experiences and information, evaluate their environment, and take necessary measures. Human intelligence is defined as the ability to learn from previous experiences, adapt to new situations, handle abstract thinking, and transform one's own surroundings using the knowledge gained. Human intelligence differs from artificial

intelligence in that AI aims to create technologies that can mimic human behaviour and perform humane activities, whereas human intelligence aims to adapt to new situations by combining various cognitive states. Humans rely on their brains' memories, computing capability, and ability to think, but AI-powered computers rely on facts and directions input into the system. The ability to learn and comprehend from numerous situations and past experiences is the foundation of human intellect. However, because AI cannot think, it lags in this field. The goal of the study is to perform sentiment analysis using MAML and BiLSTM for negative sentiment investigation among a smaller number of samples when



## **Deep Learning Model to reveal new Healthcare concepts and Improve Performance**

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### **ABSTRACT**

*Modeling information & specialist experience were practically vital in the judgment & result evaluation of healthcare provision, where the computer-assisted system was increasingly used. Traditional regulation systems, on the other hand, were incapable of producing the fundamental information because they cannot simulate the complexities of human minds & depend heavily on feature extraction of issue areas. As a result, researchers try to use a deeper developed to estimate this flaw. The deeper modeling could replicate thinking processes & integrate visual features & training into a single product. For large amounts of data, a modified form of convolution deep learning was utilized as a successful education strategy. The model would then be truly tested using two datasets: one on hypertensive obtained from a HIS platform, and another on Indian medical diagnostic and treatment prescriptions obtained from a manually translated EMR system. The test findings show that the suggested deep model that was capable of revealing previously unexplored ideas & outperforms standard shallower systems.*

**Keywords:** CAD; CNN; medical diagnosis; healthcare modeling

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### **INTRODUCTION**

In the healthcare sector, computer-assisted technology plays a vital role in judgment, economic evaluation, & effectiveness evaluation. Many research, both conceptual & empirical, has lately been published in which experience & expertise modeling was critical for the analysis of responses [1]. Moreover, the depth of human neurons in reasoning & thinking can be seen as notions with undetermined layers, making formalized expression problematic [2]. When well-designed & structured inputs were assured, excellent productivity was likely in certain situations. It was challenging to propagate a nice feature representation of ordinary programs because they need a lot of manual work & effective important indicators [3-5]. With the learning sets of data, SVM uses the standard mixture of the main features of a collection of basis functions. Because there are only three layers from inputs and outputs [6], it would be a basic structure. DT would be a deep structure with 3 layers and 1-of-K encoding for every route as its finished product. Because every route was treated as a central server, DT evolves into a three-layer structure based on the input, the conjunctive normal shape caused by a path, & 1-of-K cluster [7-9]. Deep systems, according to earlier research, necessitate well-designed feature representations in terms of avoiding manual input from people specialists [10].

As a result, researchers think that a system that includes automatic image training, categorization, & regress would be a good option. The deep learning model provides two advantages when it comes to HIS & EMR data processing [11].

# Application of the IoT to predict the Patient's health and Stress Elimination using Machine Learning Algorithm

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**ABSTRACT** More than 90% of people do suffer from getting enough stress in their life, and there is no external treatment for stress elimination other than getting distracted on some other occasions. Either the stress can be positive in the case of helping the needy people, or else it can also be a negative thing, but it suffers a lot. When a person maintains his stressful behavior, it will result in death. After making some analysis, experts identify that there are some possibilities to eliminate the stressful behavior of a person with the help of the Internet of Things and a Machine learning algorithm. The devices required for data collection from the patient's body will be equipped with internet connection and it is trained with machine learning algorithm for analysis of the data. The entire algorithm is being worked on different prospects here. The managing and monitoring occur in various parts that have been sent as output with the help of protocols. In this research, stress elimination with streaming analytics and further process is performed.

**Keywords:** Internet of Things, Machine Learning, Stress Elimination, Protocols, Health Management.

## I. INTRODUCTION

The Internet of Things has been developing technology in recent days, more than its development in various regions, the main reason for the systematic growth is creating connections between computer devices. It does not stop with the computing devices; IoT also takes a significant role in the mechanical things that are more helpful for humans. To welcome the digitalized world, people should adapt themselves to relate them with the wireless sensors and few productivity systems. With the help of IoT connections, health care monitoring creates a better evaluation and most technological interventions. Apart from the development of everyday things Internet of Medical Things is the considerable one for health care systems. Things that are happened suddenly might have to care the most, but suddenly things would impact the person's life when it comes to the health care system. Instead of worrying during a sudden occasion, it would be better to have a guiding mechanism to monitor the human body every 24 hours. This monitoring would be the great thing that evolved through the IoT and (IoMT). All the data collected by the sensors are being forwarded to all the supporters. For example, once the sensor identifies the disease, it automatically analyses the report and starts sharing the reports to the affiliated Doctor and the person's connected device?

Without the help of mechanical and other digital support, it is impossible to create a connection between the patient's body and the systems. Even the doctors are using some technical aspects to analyze the reports from the human body. Here the way of analysis can be modulated with various techniques. Often the machines are programmed to accept the instruction with the help of comparison techniques. Three main prospects are Activity Monitoring, Sweat Analysis, and identifying the body temperature. All these properties would vary according to the body condition of the person. In some instances, all these properties would have standard value; simultaneously, if the body conditions worsen, it may result in high temperature, increased humidity level, and finally, the rise of accelerometer values. The machine identifies that the patient got affected by a particular disease. Other than the spreading of external disease, if the person gets enough stress and strain in his body, it would lead to severe consequences on health conditions. These consequences may automate the functional problem within the human body.

# Research perspective on energy-efficient protocols in IoT

## Emerging development of green IoT

Energy-efficient  
protocols in  
IoT

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### Abstract

**Purpose** – Internet of Things (IoT) is an up-and-coming conception that intends to link multiple devices with each other. The aim of this study is to provide a significant analysis of Green IoT. The IoT devices sense, gather and send out significant data from their ambience. This exchange of huge data among billions of devices demands enormous energy. Green IoT visualizes the concept of minimizing the energy consumption of IoT devices and keeping the environment safe.

**Design/methodology/approach** – This paper attempts to analyze diverse techniques associated with energy-efficient protocols in green IoT pertaining to machine-to-machine (M2M) communication. Here, it reviews 73 research papers and states a significant analysis. Initially, the analysis focuses on different contributions related to green energy constraints, especially energy efficiency, and different hierarchical routing protocols. Moreover, the contributions of different optimization algorithms in different state-of-the-art works are also observed and reviewed. Later the performance measures computed in entire contributions along with the energy constraints are also checked to validate the effectiveness of entire contributions. As the number of contributions to energy-efficient protocols in IoT is low, the research gap will focus on the development of intelligent energy-efficient protocols to build up green IoT.

**Findings** – The analysis was mainly focused on the green energy constraints and the different robust protocols and also gives information on a few powerful optimization algorithms. The parameters considered by the previous research works for improving the performance were also analyzed in this paper to get an idea for future works. Finally, the paper gives some brief description of the research gaps and challenges for future consideration that helps during the development of an energy-efficient green IoT pertaining to M2M communication.

**Originality/value** – To the best of the authors' knowledge, this is the first work that reviews 65 research papers and states the significant analysis of green IoT.

**Keywords** Protocol analysis, Green IoT, Internet of Things, Energy-efficient protocol, M2M communication, Energy constraints, Optimization, Performance analysis, Research gaps and challenges

**Paper type** Research paper





# Factors affecting epidemic diseases spread and prediction of it

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**Abstract :** An epidemic disease is the rapid spread of an infectious disease to a vast number of populations in a small period of time. These diseases have claimed the lives of a large number of people and continue to do so. Though some have a cure but researchers are still struggling to find the cure for many. In this case the only thing that can be done is to prevent it by taking precautions and understand the factors responsible for spreading it. The most recent outbreak of COVID-19 in January 2020 caused the death of 2620 people world wide and there are still 79000 cases. This virus spreads through human contact and was very difficult to curb due to the outgoing and incoming population of China and the fact that the virus has an incubation period of 7-14 days. There is still no proper cure for this virus yet and it continues to spread. Understanding the disease , how it spreads , how it originated and the factors affecting it plays a huge role in curbing the disease. With a clear knowledge of the factors affecting a disease we can build a machine learning model that can predict the rate at which a disease might spread. Making use of data that we already have related to the disease and its factors for example the number of cases recorded for the disease till date, weather conditions, population and cleanliness of the area. This type of data can be used to build a model and the more information we have the more accurate the model. We can use semantic analysis and fetch data from online news sources and feed it to the model which will predict the chances of an outbreak occurring.

**Key -** Machine Learning, Data Processing, Classification Algorithms

## I. INTRODUCTION

A lot of factors play a role in an epidemic spread of a disease and these factors may vary on the basis of how the disease is transmitted. Population as a factor will have a major impact on out of a disease whose transmission depends on human contact while weather , humidity or cleanliness of an area will impact diseases transmitted by insects. To make an accurate machine learning model it is important to know the effects of these factors and get a huge amount of accurate data related to these factors depending on the area to predict if an outbreak will occur there. After collecting all the data related to the factors and number of cases for that disease in a particular area it is possible to build a machine learning model for prediction of that disease. Though every disease might have a different model as different factors affect an epidemic in different ways. Data is collected from different sources this will require the following data :

- Latitude and Longitude of a location and date
- Number of cases related to the disease
- Weather information
- Incoming and outgoing population of the area
- Vector agent density in the area

More factors can be added which will increase the accuracy of the model. After getting all the data there needs to be some preprocessing done on the data to clean the data, remove the empty values or unnecessary values. This processed data could be saved in csv format in a file or database. The data is then divided into training and testing data sets. The training data is used to create a model using different machine learning classification algorithms. These algorithms create a model by classifying the data and then test the accuracy by using the testing data set.

It is important to find the best possible algorithm that provides accurate results and for that we can compare the output of different algorithms and get the one that gives the most precise prediction.

## II. DATA SOURCES

Data can be obtained from various sources :

- Geolocation API provided by Google for location

# Brain Tumor Detection and Segmentation

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*Abstract: This paper deals with the implementation of Simple Algorithm for detection of range and shape of tumor in brain MR images and predicts the disease risk details from the given area of tumor. After researching a lot statistical analysis which is based on those people whose are affected in brain tumor some general Risk factors and Symptoms have been discovered. However this method accurate determines the accurate of stage & size of tumor and also predicts the disease details from the area of tumor. This work uses segmentation of brain tumor based on the k-means and fuzzy c-means algorithms. . In addition, it also reduces the time for analysis and predicts the disease details from the given area of tumor. Finally implement a system using java to predict Brain tumor risk level which is easier, cost reducible and time savable.*

**Keywords:** Abnormalities, Magnetic Resonance Imaging (MRI), Brain tumor, Pre-processing, K-means, fuzzy c-means, Thresholding, Naive-Bayes classification.

In this work, two algorithms are used for segmentation. K-means clustering algorithm and Fuzzy C mean algorithm. Tumor is due to the uncontrolled growth of the tissues in any part of the body. The tumor may be primary or secondary. If the part of the tumor is spread to another place and grown as its own then it is known as secondary. Normally brain tumor affects CSF (Cerebral Spinal Fluid). It causes for strokes. In this paper we focused on detection of brain tumor with the help of Brain MRI images and identify stage of tumour from the given area of tumor.

## Motivation

A reliable method for segmenting tumour would clearly be a useful tool. Currently, however, there is no method widely accepted in clinical practice for quantitating tumour volumes from MR images. The main objective of this paper is to detect the brain tumor of MRI image and calculating its area and identify stage of tumour which is easier, cost reducible and

time saveable.

## Related Work

Literature survey is the most important step in any kind of research. Before start developing we need to study the previous papers of our domain which we are working and on the basis of study we can predict or generate the drawback and start working with the reference of previous papers. In this section, we briefly review the related work on brain Tumour detection and segmentation. This system provides an efficient and fast way for diagnosis of the brain tumor called K-means algorithm. Implanting the K-mean algorithm which consists of multiple phase. Finally, segmentation is done by improved K-means algorithm with dual localization methodology. [1] Meena and Raja proposed an approach of Spatial Fuzzy C means (PET-SFCM) clustering algorithm on Positron Emission Tomography (PET) scan image datasets. The proposed FCM successful able to join the spatial neighborhood information with classical FCM and updating the objective function of each cluster. It exploits the segmentation which used for quick bird view for any problem of K-means. [2] The segmentation technique addresses the problem of segmenting an image into different regions. So the we can analyze both k-mean and C-mean algorithm in easy way. [3] Funmilola et al proposed the Fuzzy K-C-means method, which carries more of Fuzzy C-means properties than that of K-means. The F-K-C means focused attention on Clustering methods. These k-mean and C-mean algorithms were combined together to come up with another method called fuzzy k-c-means clustering algorithm, which has a better result in terms of time utilization. [4] Wilson and Dhas used K-means and Fuzzy C-means respectively to detect the iron in brain using SWI technique. The extraction of the iron region in the brain is made by K-means and Fuzzy C-means clustering method. [5] This paper proposed a dip study of brain tumor. It describes different type of diagnosis

# Blind Assistant

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**Abstract**—The Paper presents a model to facilitate blind folks with proper aid. the most aim is to decorate blind folks with necessary steerage for effective motility . Through this system a sense of artificial vision will be provided that will facilitate in providing resolution to visually defected person. varied detectors such as camera sensor,IR detector and inaudible detector with raspberry-pi zero along kind the base of the system. The paper exhibits a theoretical model and a system idea to offer a sensible electronic aid for blind folks. The system provides object detection ,real-time help .The system contains , stereo cameras and Audio feedback system.The aim of the system is to supply a value optimum and economical aid for blind that provides a way of artificial vision by providing data concerning the environmental state of affairs of stable and movable objects around them.

**Index Terms**—Ultrasonic sensor,Camera sensor,Rasoberry-pi zero,gTTS

## I. INTRODUCTION

Vision is that the most vital a part of human physiology as eighty three p.c of knowledge human being gets from the surroundings is thru vision. The 2011 statistics by the World Health Organization (WHO) predicts that there area unit 285 billion folks in world with disability , thirty-nine billion of that area unit blind and 246 with low vision.The most issue two-faced by a sand-blind person is downside in reading the text and detection the thing before of them. This is a system for blind peoples to try and do their activities while not the assistance of others.This system is developed by mistreatment Raspberry Pi and A battery backup. Thus, the user may use this device anyplace and able to use anytime.The inaudible sensing element starts operating once there area unit any obstacles before of the blind user and alerts them the voice output.

## II. EXISTING TECHNOLOGY

1) **Smart stick for blind** : This paper presents a system that provides help for visually impaired people.The system consist various sensors like Proximity sensor,Ultrasonic sensor and it provides feedback via vibratory circuit.

2) **Smart guiding system for blind** : This paper proposes a model with an aid for the blind people.The main aim of the system is to provide a safe mobility within the environment.the system make use of various sensors such as water sensor,smoke sensor and ultrasonic sensor.It alerts the user by using the buzzer.

## III. SYSTEM DESIGN

The design consists of two units:

- Obstacle detection unit.
- Image Processing unit.

The diagram higher than depicts the planned style of an embedded Blind assistant.The system components consist of numerous subsystems. The device based mostly electronic equipment consists of devices like Ultrasonic sensor,IR device and camera device.The planned system can be designed to require variety of a detachable and moveable device, which may be categorically mounted on a glasses.There is speech feedback system to offer audio feedback/guide user.

### A. Obstacle detection unit

- Ultrasonic sensor

From 2cm to 40cm, the supersonic ranging module HC-SR04 varies and also the go accuracy is of 3mm. The transmitter within the supersonic sensing element spreads ultrasonic waves during a explicit direction and also the temporal arrangement can be started once the waves square measure

IOT BASED SOLDIER E-JACKET USING GPS

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**Abstract:** In enemy territory soldiers not only have to deal with the physical threat, but also with stress and fatigue caused by protracted operations or lack of sleep. So for the security purpose we need a tool for remote soldier performance and health monitoring. So in this project a tool are implemented using biosensors like heartbeat sensor, temperature sensor for health monitoring purpose using the arduino microcontroller. Also a GPS system is used in order to track the location of soldier. Additionally a ESP8266 Wi-Fi module is also used to send the all values continuously to the military center for continuously analysis soldier records.

**Keywords:** Atmega328 microcontroller, GPS, LM35 temperature sensor, Heartbeat sensor, battery.

I. INTRODUCTION

The soldier must be integrated with advanced visual, voice and data communications to receive information from the control station or from the superiority.

For that Soldier might need wireless networks such as displaying maps and real time video not only to communicate with control room but also with side by side military personnel.

Apart from the nation’s security, the soldier must need safety by protecting himself with advanced weapons and also it is necessary for the army base station to monitor the health status of the soldier.

Many other jackets existing in the market can provide both cooling and hot service with the jacket. The different climatic conditions such as very cold and very hot temperatures could be dangerous to health. Since in very cold temperatures, the most serious concern is the risk of hypothermia or dangerous overcooling of the body. Henceforth we have developed a smart army jacket as an important resource for the army soldiers as soldiers play a very important role to protect our country in extreme cold conditions.

The smart army jacket is proposed in such a way that it could monitor the health, internal temperature as well as emergency notification in the form of short message service for the soldier.

II. LITERATURE SURVEY

[1] Soldier Security and Health Monitoring Thanga Dharsni, Hanifa Zakir, Pradeep Naik, Mallikarjuna, Raghu. 2018, the proposed framework can be mounted on the warrior's body to track their wellbeing status and current area utilizing GPS. These data will be transmitted to the control room through distributed computing. The proposed frame work involves small wearable physiological equipment's, sensors, transmission modules. Consequently, with the utilization of the proposed hardware, it is conceivable to execute a minimal effort component to ensure the

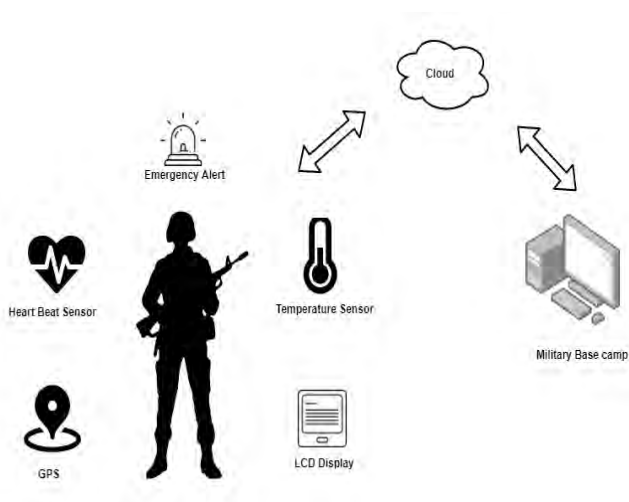


Fig 1. Overall System

**Problem Statement:**

# Computerized Adaptive Assessment

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**Abstract :** The estimation of the difficulty level of a given question is required in order to understand how well the student understood a particular topic, which would help the teachers to grade a student accordingly and decide how much attention is to be given to a particular student. There is no doubt that teachers often misjudge the difficulty level of the questions. In order to avoid that, a module is created in a data processing system for rating difficulty of a question. In this mechanism, a set of question bank is set by the teacher/admin whose difficulty level is judged by the basically two factors, first, the number of times the question is answered correctly by a particular number of students and second, the amount of time required in by the student to provide a sound analysis. The mechanism that generates the difficulty score of a question based on such above-mentioned factors uses a machine learning module. This machine learning module map features to assigned weights for scaling the difficulty score. This provided analysis could be very valuable for both teachers and students in order to detect unclear problem statements and rectify students' misconceptions.

**IndexTerms - Machine Learning, Ordinal Logistic Regression, classify.**

## I. INTRODUCTION

In typical computerized assessments, students the test taker attempts random questions pre-assigned by the test administrator, here the issues are different among the range of test-takers, probably the test might have multiple sections, like easy, moderate, and difficult. The test-taker with deep knowledge might not find the test to be challenging enough, the test taker with moderate knowledge will find the test a little difficult, and the test taker with little knowledge will find the test very challenging.[1]

So to acknowledge this issue a computerized adaptive assessment is being designed which would adapt according to the level of the test taker's understanding. This module aims a fair chance for every type of test-takers, i.e the one with maximum knowledge to score the most by solving almost all challenging questions and the one ones with less knowledge to solve easy and moderate questions and get marks according to their knowledge[5][6]

To make the examination platform adaptive, a machine learning algorithm named ordinal logistic algorithm is applied, which would classify the questions according to the difficulty levels of the questions considering the number of students answering the question correctly and the time required to solve a particular question.

When the candidate solves a question correctly then the assessment system will assign a question of higher difficulty level to the test taker, if the current difficulty level is not the highest difficulty level. Similarly, if the test taker had solved a question incorrectly, then the current difficulty level assigned to the test taker is decreased by one unless the current level is not easy.

## II. BACKGROUND

Right now, in practice Graduate Record Examination(GRE)[8], which is a standardized test which is a requirement for admission in various graduate schools in the United States and Canada, uses an adaptive assessment pattern, but it does not work exactly as the system explained in this paper. In GRE examination is conducted in two sets, where the set one and set two are of the same pattern the only difference is varying difficulty level. If the candidate solved the first set very well then the next set will be more difficult, or else the next set will be an easier one. Here the assignment of the difficulty level of the questions is done by the examiners/administrators which would not be accurate as per the students. Here in this paper, the difficulty level is set by the system according to the response of the previous test-takers. Also here the system explained in this paper, the allocation of the questions according to the previous question is done, it does not wait for an entire set to complete.

## III. WORKING OF THE SYSTEM

### a. Question Difficulty Calculation

The candidates attempt the questions parallelly. After each candidate submits an answer to a question, the difficulty level assigning module looks into the current difficulty factor of the question and the time required to solve the question, then according to the response, the difficulty level is updated after performing the required calculations. Here the faculty/admin approach module is there to assign the difficulty level of a totally new question, which is new in the

# Gesture Based Mobile Robot Controller System

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**Abstract**—Gesture Controlled Robot is a robot which can be controlled by simple gestures. The user just needs to wear a gesture device which includes a sensor. The sensor will record the movement of hand in a specific direction which will result in the movement of the robot in the respective direction. The robot and the Gesture device are connected wirelessly via radiowaves. The wireless communication enables the user to interact with the robot in a more friendly way. An important aspect of a successful robotic system is the Human-Machine interaction. In the early years the only way to communicate with a robot was to program which required extensive hard work. With the development in science and robotics, gesture based recognition came into life. Gestures originate from any bodily motion or state but commonly originate from the face or hand. Gesture recognition can be considered as a way for computer to understand human body language. This has minimized the need for text interfaces and GUIs (Graphical User Interface.)

**Keywords**— Gesture, robot, Arduino Uno, Sensors etc.

## I. Introduction

Recently, strong efforts have been carried out to develop intelligent and natural interfaces between users and computer based systems based on human gestures. Gestures provide an intuitive interface to both human and computer. Thus, such gesture-based interfaces can not only substitute the common interface devices, but can also be exploited to extend their functionality. Robots are playing an important role in automation across all the sectors like construction, military, medical, manufacturing, etc. After making some basic robots like line follower robot, computer controlled robot, etc.; we have developed this accelerometer based gesture controlled robot by using Arduino Uno. In this project we have used hand motion to drive the robot. For this purpose we have used accelerometer which works on acceleration. A gesture controlled robot is controlled by using hand in place of any other method like buttons or joystick. Here one only needs to move hand to control the robot. A transmitting device is used in your hand which contains RF Transmitter and accelerometer. This will transmit command to robot so that it can do the required task like moving forward, reverse, turning left, turning right and stop. All these tasks will be performed by using hand gesture. Here the most important component is accelerometer. Accelerometer is a 3 axis acceleration measurement device with 3g range. This device is made by using polysilicon surface sensor and signal conditioning circuit to measure acceleration. The output of this device is Analog in nature and proportional to the acceleration. This device measures the static acceleration of gravity when we tilt it and gives a result in form of motion or vibration. As rapid development of Computer Science and sensor techniques, human-computer interaction (HCI) has received great attention in recent years. HCI has provided a strong tool for the design and use of computer technology, focused on the interfaces between people (users) and computers and has become an active field of research. Some trend has been changed with the introduction of techniques based on recognition of vision, sound, speech, projective displays etc. Researchers also provide a much richer and natural mode of interaction with Man-computer methods. In the current day the human-computer interaction application of hand gesture is being developed vigorously.

The advantage of these applications is that users can control devices without touching anything such as panel, keyboard, mouse, etc. The users just control devices with facing the camera and raising the hands. Among the various types of gesture, hand gestures are easy to be used and more convenient for communication. Hand gestures are basically of two types—static and dynamic hand gesture. In this paper, we most analyze and research static hand gestures recognition. Static hand gestures do not involve any kind of hand movement in comparison to dynamic hand gesture,

# A Knowledge-Based Recommendation System using Deep Learning

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## Abstract:

An online interpersonal organization gives important data on different points. Checking and proposal frameworks gather and break down information. Paper presents a passionate wellbeing observing framework to distinguish client's mental issue, especially wretchedness and stress. Our methodology, New and inventive for the act of misery identification, it does so don't believe the self-exposure of these downturn factors through the surveys. Rather, we propose an AI approach that's, discovery of dejections in informal communities, which misuses the highlights removed from interpersonal organization information for character with accuracy potential instances of sorrow recognition. We play out an examination of the qualities and that we additionally apply AI. This work is to present Knowledge-Base Recommendation System (KBRS), we find that clients wretchedness state is firmly connected with that of his/her companions in web based life Classifier in enormous scope informational collections and break down discouraged and focused on client.

**Keywords:** *Sentiment analysis, knowledge personalization & customization, detection system, social networks, machine learning.*

## I. INTRODUCTION

Online interpersonal organization (OSN) they need become a piece of everyday life. While OSN Apparently, it grows its clients' capacity to broaden informal organizations contacts, they'll successfully reduce relational contact Interactions inside the world. Studies show that a few people's conduct is increasingly venturesome inside the OSN in light of the fact that they'll be put a cover after you speak with others there that's, concealing who I really am. Mental Depression is turning into a danger to individuals' wellbeing now days. With the quick pace of life, an ever increasing number of individuals are feeling intellectually upset. It's entrusting to recognize client's downturn in an early time to shield client. In our framework, we find clients condition of wretchedness is firmly connected with his/her companions in online networking, and huge scope dataset on social stages to efficiently examine the relationship of client's downturn states and social cooperations. a gaggle of sorrow related literary and social traits from

different viewpoints. Quick pace of life, dynamically and more people are feeling focused. Misery is non-clinical, extreme and interminable issue are regularly somewhat unsafe to individuals' physical and condition. Clients' social associations helpful for melancholy location. The mental investigations have two intriguing perceptions. The essential is disposition virus: a foul mind-set one individual to a novel during social collaboration. The second Social Interaction: individuals are known to social association of client. The progression of informal organizations like Twitter, Facebook a consistently expanding number of people will share their on consistently to day occasions and states of mind, and connect with companions through the interpersonal organizations. We are visiting group utilizing AI system. In light of influence both Facebook post content ascribes and social collaborations to reinforce mental sadness identification. Subsequent to getting wretchedness level, framework can suggest client emergency clinic for additional treatment, we are visiting show that medical clinic on guide and framework likewise prescribed to wish

## TRANSACTION AUTHENTICATION USING FACE DETECTION AND INVISIBLE KEYBOARD SEQUENCE

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**Abstract:** With the popularization of on-line trying, dealings fraud is growing seriously. Therefore, the study on fraud detection is attention-grabbing and vital. a big manner of police work fraud is to extract the behavior profiles (BPs) of users supported their historical dealings records, thus to verify if associate incoming dealings is additionally a fraud or not ocular of their bits per second. Markov process models unit widespread to represent bits per second of users, that's effective for those users whose dealings behaviors unit stable relatively. However, with the event and popularization of on-line trying, it's a heap of convenient for users to consume via Infobahn that diversifies the dealings behaviors of users. Therefore, Markov process models unit unsuitable for the illustration of those behaviors. Throughout this paper, we've an inclination to propose logical graph of BP (LGBP) which will be an entire order-based model to represent the relation of attributes of dealings records. Supported LGBP and users dealings records, we tend to square measure ready to cipher a path-based transition likelihood from associate attribute to a definite one. Here we tend to square measure ready to realize Face by pattern viola jones and LBP acknowledge formula for face detection as we tend to use invisible keyword sequence for authentication of OTP. The keyword sequence modification once. At constant time, we've an inclination to stipulate associate knowledge entropy-based diversity constant thus on characterizes the variability of dealings behaviors of a user. we've an inclination to additionally track fraud user with location by mackintosh address of the user laptop pc transportable or computer that have last dealings successfully. additionally , we've an inclination to stipulate a state transition likelihood matrix to capture temporal choices of transactions of a user. Consequently, we tend to square measure ready to construct a BP for every user thus use it to verify if associate incoming dealings is additionally a fraud or not. Our experiments over a true data set illustrate that our methodology is healthier than three progressive ones.

**Index Terms**—Behavior profile & e-commerce security, Face Detection, Invisible Keyboard Sequence, fraud detection, on-line dealings.

### I. INTRODUCTION:

At present, Markov chains and their extensions are often used because the models of personalized transaction BP [1], [2], [3], [4], [5], [6]. Markov chain models are good at describing their BPs for those users whose transaction behaviors are stable, and our experiences also prove this. However, with the event and popularization of online shopping, the transaction behaviors of a user vary often then her/his BP should

be ready to characterize transaction diversity. Therefore, Markov chain models aren't too suitable for those users. during this paper, we propose a replacement model to represent a user's BP under considering behavior diversity, then present a fraud detection method supported this new model. Face recognition (FR) may be a highly topical research direction in computer vision. Recently, significant progress has been achieved in face recognition using deep learning methods and enormous database of



# An Efficient Approach to Control the Over Speeding of Vehicles

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**Abstract**— Now a day's road accidents are increased very rapidly. Most of accidents are happened near public places like schools, hospitals etc. due to rash driving. The main reason behind this is over speeding. It is very difficult to find out violation of over speeding rule. Specially in India traffic rules are not followed very closely. To apply the traffic rule strictly the most efficient way is to increase automation in RTO systems. The main aim of this system is to detect the over speeding violation automatically. The system detects the speed of the vehicle, if over speeding occurs, capture the license number of vehicle and send it via email to RTO and the vehicle owner with penalty. As the vehicle comes in the speed that speed is calculated by the sensors and check whether it crosses the limit or not. With the help of this system number of accidents can be reduced.

**Keywords**— IOT, Over speed detection, automation, RTO system, Image processing

## I. INTRODUCTION

The major concern of vehicle accident is the part of continual disaster lists, which might happen anywhere anytime. In accordance with Association for Safe International Road Travel Report, around 1.24 million people die and 50 million people are getting wounded on the roads each year in the World [2]. The reasons behind those accidents are driving under the influence, over speeding, reckless driving etc. out of which the major cause being the over speeding of vehicle. In order to overcome this problem and decrease the death rate caused by such accidents, introduction of new and innovative speed enforcement technology is necessary. There are so many ways to detect the speed of the vehicle. One of the most promising technologies is LIDAR technology. It is the technology used in the speed guns held by the police personnel to check the speed of the moving vehicle. There exist extensive variety of methodologies for moving vehicle detection and tracking but efficient system with higher accuracy and economy needs to be developed.

Increase in speed multiplies the risk of the accident and severity of injury during the accident. At high speed, the vehicle needs a greater distance to stop i.e. braking distance needs to be more. The need of the hour thus is to build a system that will detect such over speeding vehicles. Also the other factors like driving at night, weather conditions are going to affect the manual system. In addition, the police officer has to inform the nearest authority to stop the car. This is inefficient and a lot of time is wasted. With the number of vehicles increasing day by day, this technique cannot be trusted with the lives of people.

After keeping all these considerations in mind, we have designed a model of highway over speeding vehicle detection system to control the over speeding of vehicles. Our system deals with detection of over speeded cars on highways and thereby informing the authorities in case of violations. The advantage of our proposed system is that it will detect the speed of the car and if it is above the defined speed limit of the road, it will click a snap of the license plate number of the car. Not only that, it will also read the license plate number, extract the number and send it to the nearest concerned traffic authorities.

## II. LITERATURE REVIEW

Mohammad Khan & Sarfraz Khan [2], have designed Automated Speed Detection System that may detect the vehicle's speed and check whether it is over speed, if yes then remove the particular vehicle's license number and send it through mail to Toll Plaza in order to indict fine. Here, Doppler Effect observable fact is employed for measuring the speed. If over speeding is identified, then a camera captures the image of a vehicle automatically; and DIP (Digital Image Processing) methods are used to remove the license number. The findings have unconcealed that the developed system detects over dashing vehicle with success, mines the license number, has great performance and may be used on roads to test out for over speeding vehicles.

## INTERNET BASED ROOM CONTROLLER

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**Abstract:** As we are living in 21<sup>st</sup> century the whole world is focusing on automation. But there is not a significant development in automating of homes. With the help of IOT we can make the whole lot of difference in the field of home automation. This paper majorly focus on making a system to integrate with the house or building or a particular room so that we can control the room remotely as well as we can allow the system to make decisions on its own based on the predefined values that we have set in the system. Also the working of the system will be totally independent of the network that the system and the user will be connected.

**Keywords:** Artificial Intelligence, Cloud, Automation, Blynk.

## I. INTRODUCTION

Internet Based Room Controller is controlling of devices that are present in room or any infrastructure. We can also say it uses combination of specific software and hardware to control the appliances present in our system .It integrates electronic home appliances with our device to integrate with each other and work in a particular way. Eg. We can have centralized control of all the electronic appliances present in our system to improve comfort, convenience, energy ,efficiency and safety. In today's world automation is being appreciated due to easiness of viewing , monitoring and controlling the appliances and various other things according to users comfort and needs. The huge popularity of automation has been increasing substantially due to considerable affordability and simplicity through various devices like smart phone and PC connectivity with the system .A home automation system integrates electrical and electronic devices of the house with each other also with the system .The various techniques applied in home automation includes those in business as well as those of domestic activities such as lighting control system and the use of other electronic appliances. Appliances may be connected through a home network to allow control to a personal computer, and may allow remote access from the internet.

### Problem Statement:

Nowadays as the structure of the buildings are increasing so it is very difficult for us to manage each and every device optimally so that the electrical energy is utilised in the best manner. The system that we have proposed in that we can control any device remotely from anywhere in the world as we are controlling each and every device through internet so we just need a android device and internet connection to control the devices.

## II. LITERATURE SURVEY

In paper " IOT Based Home Automation Using Arduino " it specifies controlling over switches using PAN network. In this system the whole system works with the total dependency on bluetooth means we can control the electrical devices present in our home using bluetooth. Here the range of controlling of very less and this type of system will work efficiently on the smaller scale only. In paper "IOT Based Smart Security and Smart Home Automation" the main focus is to provide security to the households or offices it specifies usage of security system like camera and door locks to be monitored remotely so the security of the households is easy to manage and monitor. But we cannot control all the appliances in this system the focus is on security only. In paper "A Node MCU Based Home Automation System" here it uses a Wi-Fi based home automation system Without use of a dedicated microcontroller this system can be implemented on a small scale only as there is no microcontroller so it is totally dependent on Node

# Experimental Investigation of SiO<sub>2</sub> Coating on the Performance of Solar Panel

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## Abstract:

Sun is source of enormous and infinite source of renewable energy. This energy is continuously available at free of cost. Use of this clean energy for the purpose like Power generation, water desalination, drying is need of hour. Solar energy can be effectively used for the generation of electricity either by photovoltaic or concentrated solar power in last few decades. The main challenge with this is the heavy loss of heat during this conversion. Researchers have made efforts to reduce this loss so as to increase efficiency of solar panels.

In this paper, the effect of SiO<sub>2</sub>(Sol-gel method) coating on the performance of multicrystalline Solar panel has been examined. Multiple Solar Panels with different coatings at same orientation, inclination, location has been tested for analyzing improvement in performance. For the analysis of performance of Solar Panel, hourly readings of Voltage and Current have been taken with the help of Multimeter. Hourly trends in energy generation, efficiency has been analysed.

## Article History

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**Keywords:** Solar panel, photovoltaic, Silicon, SiO<sub>2</sub>, Nanoparticles.

## I. INTRODUCTION

In the recent years, effective and efficient harnessing of solar energy played a crucial role in providing environment-friendly energy for domestic, industrial, agricultural and other needs of mankind. Solar energy is more relevant for developing countries whose energy requirements are increasing rapidly as a result of large scale industrialization and growing population. Solar photovoltaic field is getting high priority in countries like USA, Italy, Japan, England, France, and India. There is a considerable interest, effort and funding in this field. Solar cells have been standard wellspring of intensity for space vehicles and satellites for most recent 40 years and this is as yet one of the significant utilizations of sun based cells. Their utilization of providing power for earthbound applications will be inescapable when the issue of monetary accessibility of sunlight based cells is explained. The difficulties of delivering solid and

aggressively monetary electrical force for earthly applications prompted exceptional research exercises in practically all creating nations during recent decades. There are a few semiconductor materials which can be changed over into sun based cells yet just Silicon, Cadmium sulfide, gallium Arsenide have indicated empowering results.

Single crystal Silicon cells have high refractive index. Significant portion of a solar radiation is reflected from the surface of the photovoltaic converter cell and, as a result, this does not contribute to the carrier pair generation process. This results in efficiency reduction of these cells. Hence it becomes really important to search about antireflective coatings and the search for the materials for their production. The coatings antireflect the light of a visible spectrum are applied on the protective glasses or directly onto the front surface of the solar cells[1]. Different techniques have been used to deposit SiO<sub>2</sub> films, including sputtering, sol-gel, chemical vapor

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# Design and Fabrication of Zero Turn Vehicle

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## Abstract

In today's world on road vehicle demand is increased due to increase in world population. This increase in number of on road vehicles causes people to face problems like car parking in crowded places. In modern era, the major characteristics of the vehicle like steer ability and handling become major serious problem. Car parking has become serious problem in the country. To overcome the problem an alternative solution is proposed and thus the concept of *Zero Turn Vehicles* has been introduced. The concept is to change wheel system instead of total steering system, which is more convenient for the vehicle. Zero turning is done by turning the drive wheels at same rate in opposite direction at lower speeds; the turning circle radius is greatly reduced and is almost equal to length of car. In this project frame has been made from square bar. Wheel has four dc motors for wheel rotation and four motors to change direction of each wheel. As the vehicle rotates 360 degree, it is very useful to turn the vehicle in narrow space, parking problems at malls, traffic signal point and back turning on narrow roads.

**Keywords:** Zero Turn, 90deg steering, less noise, easy parking of car, 360 deg rotating, eco-friendly.

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## INTRODUCTION

In present world of industrialization and fast growing population automobile has become basic necessity for transportation of goods and passengers. In city driving condition of vehicles with higher wheel base and track width face many problems. Today most of the vehicles use the two wheel steering system as their main steering system. The two wheel steering system has the low efficiency as compared to four wheel steering system. The four wheel steering system can be employed in vehicles to increase their steering response, increase vehicle stability when moving at certain speed, or to decrease turning radius at low speed. There is need of a mechanism which results in less turning radius. This can be achieved by using four wheel steering system instead of conventional steering. To overcome this problem a concept of „ZERO TURN FOUR WHEEL VEHICLE“ is introduced. Zero turn four-wheel vehicles implies the vehicle rotating about an axis passing through centre of gravity of vehicle i.e. the vehicle turning at the same place, where it is standing. Zero wheel system consists of number links and mechanisms. No extra space is required to turn the vehicle. So vehicle can be turned in the space equal to the length of the vehicle itself. In this system, the wheels connected to the front axles are turned opposite to each other, and so are the wheels connected to the rear axle. The wheels on the left half vehicle rotate in one direction and the ones on the right half of the vehicle rotate in the opposite direction. This arrangement of the wheels enables the vehicle to turn 360 degrees, without moving from the spot, i.e. the



# Numerical and Experimental Investigations on Flexural Fatigue Behaviour of Glass/Epoxy Composite and SAE 1040 Steel Tubes for Automotive Applications

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## Abstract

Fatigue life of automotive structures depends on static strength, the range of stress, mode of cycling, load histories, and environmental conditions. i.e., temperature, humidity, moisture, etc. This paper presents results on the flexural fatigue life and damage accumulation of SAE 1040 steel and Glass/Epoxy composite automotive material tubes at room temperature in the dry condition. The correlation between their structure, geometry and fatigue behavior is a subject area that needs to be understood and investigated in the automotive applications like anti-roll bars and tubes. For comparative durability studies, the flexural static and fatigue tests were carried out on test specimens under constant amplitude with a sinusoidal waveform for a frequency of 3 Hz.

Flexural fatigue loading conditions were analyzed at different load levels from 30% to 87% of the material ultimate flexural strength. Fatigue tests were stopped after 1 million cycles even if fracture or damage were not observed. Experimental S-N curves of SAE 1040 steel and Glass/Epoxy composite tube specimens were obtained under constant amplitude loading conditions. Fatigue properties obtained from specimen testing are then used in life predictions using the S-N approach. The predicted lives and damage evaluated from experimental and Finite Element codes using ANSYS software are found to be in good agreement. The fracture features of the steel and composite tubes observed with a Scanning Electron Microscope (SEM) were observed to agree with the obtained test data and predicted mechanism.

## Keywords

Static flexure, Flexural fatigue, FE analysis, Glass/Epoxy composite tube, SAE 1040 tube, Fatigue life predictions

## Introduction

The automotive industries are always a step ahead of improvement in fulfilling demand and market expectations such as lighter vehicles, reduced design lead time and excellent reliability. Numerous research and papers have been found on development, and the characterization of automotive materials on fatigue behavior, i.e., such as chemical composition, heat treatments, and surface finish. While, little or no attention has been paid to addressing some actual problems like extreme temperature conditions, and ductile to brittle transition temperature are applied in automotive products. The excellent combination of load-bearing capacity and the crashworthiness of the structure is a significant need. It is not only limited to static strength alone as a primary design criterion but also requires fatigue design. For an application of a wide range of automotive and aircraft structures (rotor blades, anti-roll bar, leaf spring, fork suspension, etc.) fatigue loading is unavoidable, where the weight-sensitivity

is more crucial, and the dynamic failure is often critical. The fatigue knowledge is essential in such cases with the behavior of automotive materials undergo fatigue damage like nucleation and the progressive growth of a single flaw in metallic alloys and complexly diffuse damage zones in composites.

The failure life is predicted regarding nucleation and growth of small crack propagation in the design and durability of automotive steel (low and medium, mild steel) components. Firstly, monotonic tests were conducted for the mechanical properties required for cyclic/fatigue loading and to define the cyclic properties of the materials. The durability performance predictions can be performed by developing correlations among the monotonic testing data and fatigue properties of materials [1, 3]. The damage of carbon steel materials under combined loading can be calculated conventionally by strain-based approaches, namely Coffin-Manson (CM), Smith-Watson-Topper (SWT), and Morrow (M) requires strain values from metallic specimens. For more accuracy, the

## DECOMPOSITION OF THE PRODUCT OF CYCLES BASED ON DEGREE PARTITION

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### Abstract

The Cartesian product of  $n$  cycles is a  $2n$ -regular,  $2n$ -connected and bipancyclic graph. Let  $G$  be the Cartesian product of  $n$  even cycles and let  $2n = n_1 + n_2 + \cdots + n_k$  with  $k \geq 2$  and  $n_i \geq 2$  for each  $i$ . We prove that if  $k = 2$ , then  $G$  can be decomposed into two spanning subgraphs  $G_1$  and  $G_2$  such that each  $G_i$  is  $n_i$ -regular,  $n_i$ -connected, and bipancyclic or nearly bipancyclic. For  $k > 2$ , we establish that if all  $n_i$  in the partition of  $2n$  are even, then  $G$  can be decomposed into  $k$  spanning subgraphs  $G_1, G_2, \dots, G_k$  such that each  $G_i$  is  $n_i$ -regular and  $n_i$ -connected. These results are analogous to the corresponding results for hypercubes.

**Keywords:** hypercube, Cartesian product,  $n$ -connected, regular, bipancyclic, spanning subgraph.

**2010 Mathematics Subject Classification:** 05C40, 05C70, 68R10.

### 1. INTRODUCTION

The graphs considered in this paper are simple, undirected and finite. The *Cartesian product* of two graphs  $G_1$  and  $G_2$  is the graph  $G_1 \square G_2$  with vertex set  $V(G_1) \times V(G_2)$  in which  $(u_1, u_2)$  is adjacent to  $(v_1, v_2)$  if and only if  $u_1$  is adjacent to  $v_1$  in  $G_1$  and  $u_2 = v_2$ , or  $u_2$  is adjacent to  $v_2$  in  $G_2$  and  $u_1 = v_1$ . The  $n$ -dimensional hypercube  $Q_n$  is the Cartesian product of  $n$  copies the complete graph  $K_2$ . Therefore  $Q_n$  is the Cartesian product of  $n/2$  copies of a cycle of length 4 when  $n$  is even. The Cartesian product of cycles and hypercubes are popular interconnection network topologies (see [6, 11]). The hypercube  $Q_n$  is



# Factorizations of the product of cycles

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## Abstract

An  $H$ -factorization of a graph  $G$  is a partition of the edge set of  $G$  into spanning subgraphs (or factors) each of whose components are isomorphic to a graph  $H$ . Let  $G$  be the Cartesian product of the cycles  $C_1, C_2, \dots, C_n$  with  $|C_i| = 2^{k_i} \geq 4$  for each  $i$ . El-Zanati and Eynden proved that  $G$  has a  $C$ -factorization, where  $C$  is a cycle of length  $s$ , if and only if  $s = 2^t$  with  $2 \leq t \leq k_1 + k_2 + \dots + k_n$ . We extend this result to get factorizations of  $G$  into  $m$ -regular,  $m$ -connected and bipancyclic subgraphs. We prove that for  $2 \leq m < 2n$ , the graph  $G$  has an  $H$ -factorization, where  $H$  is an  $m$ -regular,  $m$ -connected and bipancyclic graph on  $s$  vertices, if and only if  $m$  divides  $2n$  and  $s = 2^t$  with  $m \leq t \leq k_1 + k_2 + \dots + k_n$ .

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**Keywords:** Cycle product; Factorization;  $n$ -connected; Regular; Bipancyclic

## 1. Introduction

All graphs considered here are finite, simple and undirected. The product  $G_1 \square G_2$  of two graphs  $G_1$  and  $G_2$  is the graph with vertex set  $V(G_1) \times V(G_2)$ , where  $(u_1, u_2)$  is adjacent to  $(v_1, v_2)$  in  $G_1 \square G_2$  if and only if either  $u_1 = v_1$  and  $u_2$  is adjacent to  $v_2$  in  $G_2$ , or  $u_2 = v_2$  and  $u_1$  is adjacent to  $v_1$  in  $G_1$ . The  $n$ -dimensional hypercube  $Q_n$  is the product of  $n$  copies of  $K_2$ . The product of cycles and hypercubes are popular interconnection networks in parallel computing (see [1,2]).

A decomposition of a graph  $G$  is a list  $H_1, H_2, \dots, H_n$  of graphs with union  $G$  such that each edge of  $G$  appears in  $H_i$  for exactly one  $i$ . If in addition the subgraphs  $H_i$  are all isomorphic to a graph  $H$ , then we say that  $H$  divides  $G$  and write  $H|G$ . A factor of  $G$  is a spanning subgraph of  $G$ . A factorization of  $G$  is a decomposition into factors. If each component of a factor  $F$  of  $G$  is isomorphic to a graph  $H$ , then we call  $F$  as a  $H$ -factor of  $G$ . A decomposition of  $G$  into  $H$ -factors is called an  $H$ -factorization of  $G$  and we denote it by  $H||G$ . A Hamiltonian decomposition of  $G$  is a  $C$ -factorization of  $G$ , where  $C$  is a Hamiltonian cycle in  $G$ .

Factorizations of graphs are well studied in the literature (see the surveys [3–5] and the book by Bosák [6]). Kotzig [7] constructed a Hamiltonian decomposition of the product of two cycles. Foregger [8] proved the existence

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## REVIEW ON SOCIAL MEDIA MENTAL DISORDER DETECTION SYSTEM

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### ABSTRACT:

*The era of information technology at least 80% of internet subscriber use smartphone, the 21st century has been advanced with the internet and its relevant applications, it has reduced the distance of communication and helped a lot to bring life with ease[1]. But the excessive use of it is increasing mental illness in no of users which results in mental disorder. This system aim to explore data mining techniques to detect following real life disorder types :1) Cyber-Relationship (CR) addiction, which includes the addiction to social networking, checking and messaging to the point where social relationships to virtual and online friends become more important than real-life ones with friends and families 2) Net Compulsion (NC), which includes compulsive online social gaming or gambling, often resulting in financial and job-related problems; and 3) Information Overload (IO), which includes addictive surfing of user status and news feeds, leading to lower work productivity and fewer social interactions with families and friends offline.4) No-Phone Phobia, it means living without phone makes difficult[2].*

**Keywords:** Social media, Cyber-Relationship (CR), mental disorder.

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### [1] INTRODUCTION





## SMART SHOES NAVIGATION

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### ABSTRACT:

*The real time problems which are faced by blind peoples are really important for the daily routines because of the inability to see the blinds are really getting disturbed so that there is need of the artificial intelligence and the combination of the IOT and the software application so that we are going to change the view of the blind towards the technology. So that we are going to use the IOT and Android Technology*

**Keywords:** IOT, Smart Shoes, Blind Navigation System.

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### [1] INTRODUCTION

In the Proposed system for Blind, low vision, visual impairment and vision loss have dramatic impacts on individuals experiencing such disabilities. These carry with them physiological, psychological, social, and economic outcomes, hence impacting the quality of life and depriving such individuals from performing many of the Activities of Daily Living (ADL), the most crucial of which is navigation and mobility. Blindness is a qualitative term that describes the clinical condition whereby individuals have no light perception as a result of total vision loss. Blindness also refers to those who have so little vision that they have to



## INTERACTION WITH PLATFORM GAMES USING SMARTWATCH

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**Abstract:** This work proposes the development of a method for smart watches that allows to control platform games using continuous recognition of gestures and conducts a case study as the game Super Mario World. Uses a set of gestures based on geometric shapes to send actions to the game. Gesture recognition is performed by the algorithm of continuous gesture recognition, as it is able to recognize a gesture before being finalized, allows an action to be performed quickly, improving feedback. The recognition process was paralleled to improve performance. A technique has been developed that allows the execution of several gestures in sequence, without the need for a signaling that a gesture has been finalized or initiated. It was also created a technique that allows the sending of special commands to the game using the pressure applied on the screen by the player.

**Keywords:** Smart watch, Wearable Devices, Continuous Gesture Recognition, Games, Platform Games, Raspberry PI 3, Super Mario.

The smartwatch is a smart wearable device in the shape of a watch, which can work in conjunction with a smartphone. It facilitates the daily life of people, because everything is available in a small screen attached to the user's wrist. In addition, there are several applications to these devices and their presence in the world population is increasing. Because they are small devices, the interaction with these devices still presents a challenge, since their intention was to facilitate the life of the user. However, there are several surveys to improve interaction with these devices. Recently, surveys are being developed on using smartphones and smartwatches to control games and to collect data from the way people are playing.

### 1.1 Motivation:

Our Motivation is to enhance user gaming experience which is control free experience. User can use his own smartwatch as his gaming console. Various platform games such as super mario, contra, squiz, etc. can be played through the smartwatch.

## 1. INTRODUCTION

# SMART ELECTRONIC WHEELCHAIR USING BLUETOOTH MODULE AND IOT.

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**Abstract:** Internet of Things (IoT) is an environment where in things interact with each other intellectually to provide useful and meaningful information. The services provided by the IoT systems can widely be used for variety of applications related to health care, transportation, security, etc. This paper presents a report on the prototype design of Smart Wheelchair. IoT based system will help the guardian to control this wheelchair with the help of an Bluetooth application. The user sitting in remote area can get connected with its wheelchair via mobile app. Moreover, user can control this wheelchair through which some input from HC-05 give voice commands. This system allows the user to robustly interact with the wheelchair at different levels of the control (left, right, forward, backward and stop). Place that wheel chair in proper defined PC.

**Index Terms** – Arduino uno, LCD Display, Bluetooth module, Ultrasonic sensor.

## I. Introduction

In a very simple language, a wheelchair is a machine with wheels enabling easy movement, which empower a physically disabled person to move around with less dependency on others. People have disabilities with their hands, foots, lower extremities which puts a limit to perform regular task in their daily life. Still these wheelchairs have not satisfied the needs of the disabled people. It is therefore crucial that problems are understood in detailed and accordingly sensors should be equipped, hence this paper is a result of the needs and includes development of a multifunctional chair. The Internet of Things (IOT) is the combination of uniquely identifiable embedded computing devices within the existing Internet infrastructure. Typically, IOT offers advanced connectivity of devices, systems, and services that provides machine-to-machine communications (M2M) and covers a variety of protocols, domains, and applications. The Five movements of the wheelchair can be described as following: 1. Moving forward 2. Moving backward 3. Turning to the right 4. Turning to the left 5. Stop condition This prototype is capable of detecting obstacle in all four direction of chair using IR sensor. In this paper we are presenting an IOT based system which will help disabled people to move the chair safely and efficiently.

## II. LITERATURE SURVEY

### 1.IOT BASED- SMART WHEELCHAIR WITH HEALTH MONITORING SYSTEM.

**AUTHOR:-** Shubham Sagar Nayak , Upasana , Prateek Gupta and Atul B. Wani

This population needs a support that is provided by wheelchair. The pushing wheelchair is the initial one in which the user has to push the chair with the hands. It gives stress on the user when travelling for a long distance. So with the help of technology and human efforts the idea of automatic wheelchair was evolved. An automated wheelchair is based on some input interfacing machine which gives input to the motor. The motor processes the input provided and takes the corresponding action accordingly (in terms of movement – move left, front, back, right). With the introduction of android Smartphone in the system, the working becomes less complex. The system becomes quite user-friendly to the user.

### 2.ANDROID BASED APPLICATION FOR WIRELESS CONTROL OF WHEELCHAIR

**AUTHOR:-** Archana Hule<sup>1</sup> , Rekha Bandage<sup>2</sup> , Pratik Shah<sup>3</sup> , Rashmi Mahajan<sup>4</sup>

# A Survey: Machine Learning Approach for Tracking and Predicting Student Performance in Degree Programs

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**Abstract:** — Educational Data Mining (EDM) and Learning Analytics (LA) research have emerged as interesting areas of research, which are unfolding useful knowledge from educational databases for many purposes such as predicting student success. The ability to predict a student's performance can be beneficial for actions in modern educational systems. Existing methods have used features which are mostly related to academic performance, family income and family assets; while features belonging to family expenditures and student's personal information are usually ignored. In this paper, an effort is made to investigate aforementioned feature sets by collecting the scholarship holding student's data from different universities. Learning analytics, discriminative and generative classification models are applied to predict whether a student will be able to complete his degree or not. Experimental results show that proposed method significantly outperforms existing methods due to exploitation of family expenditures and students' personal information feature sets.

Accurately predicting students future performance based on their ongoing academic records is crucial for effectively carrying out necessary pedagogical interventions to ensure students on-time and satisfactory graduation, predicting student performance in completing degrees (e.g. college programs) is much less studied and faces new challenges: (1) Students differ tremendously in terms of backgrounds and selected courses; (2) Courses are not equally informative for making accurate predictions; (3) Students evolving progress needs to be incorporated into the prediction. In this paper, we develop a novel machine learning method for predicting student performance in degree programs that is able to address these key challenges.

**Keywords:** Data Mining, Machine Learning, Personalized Education, Tracking Students Performance, Course Prediction, and Recommendation System.

## 1. INTRODUCTION

To address the aforementioned challenges, we proposed a novel algorithm for predicting student's performance in college programs given his/her current academic records. In Proposed studies shows that academic performances of the students are primarily dependent on their past performances. Our investigation confirms that past performances have indeed got a significant influence over students' performance. Further, we confirmed that the performance of SVM increases with increase in dataset size.

System will comprise the tracking of detailed information of a student regarding his academics and curricular activity and would predict the right learning Courses using an algorithm over the information tracked meeting the ambition or the goal for a student.

In the last decade, school conducts examination manually. It has so many problems. The existing systems are very time consuming. It is difficult to analyze the exam manually. Results are not precise as calculation and evaluations are done manually. Result processing after summation of exam takes more time as it is done manually. So we introduce a Preschool examination Portal system, which is fully computerized. Existing system is a large man power process and is difficult to

# A Parallel System Implementation of Classification and Disease Prediction on Machine Learning from Healthcare Communities

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**Abstract:** To promote sustainable development, the smart town implies a worldwide vision that merges AI, deciding, data and communication technology (ICT), and also the internet-of-things (IoT). during this project, the subject of disease prediction and diagnosing in smart healthcare is reviewed. because of information progress in medical specialty and healthcare communities, correct study of medical information edges early disease recognition, patient care and community services. once the standard of medical information is incomplete the exactitude of study is reduced. Moreover, completely different regions exhibit distinctive appearances of bound regional diseases, which can lead to weakening the prediction of disease outbreaks. within the planned system, it provides machine learning algorithms for effective prediction of assorted disease occurrences in disease-frequent societies and predicts the waiting time for each treatment task for every patient likewise as a Hospital Queuing Recommendation (HQR) system is developed for recommending treatment task sequence with relevancy expected waiting time. It experiments on a regional chronic sickness of cerebral pathology. victimization structured and unstructured information from hospital it uses Machine Learning call Tree algorithmic rule and KNN algorithmic rule. To the most effective of our data within the space of medical huge information analytics none of the present work centered on each information varieties. Compared to many typical estimate algorithms, the calculation accuracy of our planned algorithmic rule reaches 94.8% with a convergence speed that is quicker than that of the CNN-based uni-modal disease risk prediction (CNN-UDRP) algorithmic rule. additionally, challenges within the preparation of disease diagnosing in healthcare are mentioned.

**Index Terms -** Convolutional neural network, intelligence communication technology (ICT), internet-of-things (IoT), Hospital Queuing Recommendation (HQR) system, Patient Treatment Time Prediction (PTTP), Machine Learning.

## I. INTRODUCTION

This record portrays the task's intended interest group and its UI, equipment and programming prerequisites. It characterizes how the customer, group and gathering of people see the item and its usefulness. The healthcare problem of health diseases has been increased in many countries. Therefore, it is essential to perform risk assessments for chronic diseases. Motivated by this problem, Support Vector Machine algorithm & Naive Bayesian algorithm are been proposed for disease prediction using unstructured and structured data, respectively. First presented a bio-inspired high-performance heterogeneous vehicular telematics paradigm, such that the collection of mobile users' health related real-time big data can be achieved with the deployment of advanced heterogeneous vehicular networks. Chen et.al proposed a healthcare system using smart clothing for sustainable health monitoring. Qiu et al. had thoroughly studied the heterogeneous systems and achieved the best results for cost minimization on tree and simple path cases for heterogeneous systems. Patients' statistical information, test results and disease history are recorded in the EHR, enabling us to identify potential data-centric solutions to reduce the costs of medical case studies. Qiu et al. proposed an efficient flow estimating algorithm for the telehealth cloud system and designed a data coherence protocol for the PHR (Personal Health Record)-based distributed system. Bates et al. proposed six applications of big data in the field of healthcare. Qiu et al. proposed an optimal big data sharing algorithm to handle the complicate data set in

# Review of Blockchain based Forensics Analysis Secure Node Diagnosis Mechanism of Smart Grid

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**Abstract:** The smart terminal and grid protection devices play an awfully vital role within the safe operation of the smart grid. Ancient maintenance and renewal of the middle node wastes loads of men and material resources and have immense safety implications. This system proposes a security instrumentality identification mechanism supported association blockchain technology to understand additional economical, convenient and secure device maintenance. Once a tool has issues or notices improper operation, it will build a tool identification request within the association blockchain network, and receive identification response from vender or non-original provider nodes. This theme styles a decentralized safety instrumentality identification sensible contract, combining response node price and credit, and applies a multi-dimensional reverse auction mechanism to work out bid node and dealing value. once a wise device diagnosed, the relevant message is going to be preplaced and sent to a Smartphone, which might use the shopper to line up the sensible contract of kit operation policy. The planned theme is secure to not reveal sensitive data within the method of device interaction.

**Keywords:** Blockchain, distributed systems, internet of things.

## I. INTRODUCTION

A framework that integrated blockchain technology with smart devices was planned to produce a secure interaction platform and thereby guarantee economical and best use of available resources, whereas at the same time providing higher client services and conjointly conferred a blockchain platform, that by running mathematician Complete code on the to attain an economical and safe management for the devices. However, since ancient public blockchain needs all network nodes to synchronize the data on the distributed storage chain, this may result in network congestion. Therefore, we have a tendency to propose a association blockchain supported, specializing in time period interaction device diagnosing, and developed a brand new safety instrumentation diagnosing mechanism. The planned theme doesn't need all nodes to participate within the agreement, avoiding network congestion.

## II. RELATED WORK

Previously proposed system k-Means Clustering with Outlier Removal [1], states that, outlier detection is an important information analysis task in its own right and removing the outliers from clusters will improve the clustering accuracy. During this system, author tend to extend the k-means formula to produce information clustering and outlier detection at the same time by introducing an extra "cluster" to the k-means formula to carry all outliers. Author tend to style AN iterative procedure to optimize the target perform of the planned formula and establish the convergence of the iterative procedure. Numerical experiments on each artificial data and real data are provided to demonstrate the effectiveness and efficiency of the proposed formula.

Previous system, Blockchain and Smart Contracts for the Internet of Things [2] stats that, author examine whether they make a good fit for the Internet of Things (IoT) sector. Blockchain allow them to have a distributed peer-to-peer network where non-trusting members can interact with each other without a trusted intermediary, in a verifiable manner. Author review how this mechanism works and also look into smart contracts—scripts that reside on the blockchain that allow for the automation of multi-step processes. Then move into the IoT domain, and describe how a blockchain-IoT combination: 1) facilitates the