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|       | <p><b>Abstract:</b> Essays are crucial testing tools for assessing academic achievements, integration of ideas and ability to recall, but are expensive and time consuming to grade manually. Manual grading of essays takes up a significant amount of instructor's valuable time, and hence is an expensive process. Automated grading, if proven to match or exceed the reliability of human graders, will significantly reduce costs. The purpose of this project is to implement and train machine learning algorithms to automatically assess and grade response. These grades from the automatic grading system should match the human grades consistently. Currently, automated grading is used instead of second graders in some high-stakes applications, and as the only grading scheme in low stakes evaluation.</p> <p><b>Keywords:</b> Automated essay grader; Machine Learning; Natural Language Processing; Linear Regression.</p> <p><b>References:</b></p> <ol style="list-style-type: none"> <li>1. Adamson, Alex, Andrew Lamb, and Ralph Ma. "Automated Essay Grading." (2014).</li> <li>2. Mahana, Manvi, Mishel Johns, and Ashwin Apte. "Automated essay grading using machine learning." Mach. Learn. Session, Stanford University (2012).</li> <li>3. Song, Shihui, and Jason Zhao. "Automated Essay Scoring Using Machine Learning."</li> <li>4. Preston, Dan, and Danny Goodman. "Automated Essay Scoring and The Repair of Electronics." Technical report, <a href="http://snap.stanford.edu/class/cs341-2012/reports/03-Preston_cs341_-_Dan_and_Danny_-_Final.pdf">http://snap.stanford.edu/class/cs341-2012/reports/03-Preston_cs341_-_Dan_and_Danny_-_Final.pdf</a> (2012).</li> <li>5. Natural Language Processing [Online]. Available: <a href="https://en.wikipedia.org/wiki/Natural_language_processing">https://en.wikipedia.org/wiki/Natural_language_processing</a></li> </ol>   |  | 1-3      |  |
| 2.    | <b>Authors:</b>   | <b>Stavros Sakellariou, Stergios Tampekis, Fani Samara, Olga Christopoulou, Athanassios Sfougaris</b>    |          |  |
|       | <b>Paper Title:</b>   | <b>Observatories Establishment for the Prevention of Forest Fires. The case of Thasos Island, Greece</b> |          |  |
|       | <p><b>Abstract:</b> Forests are primary providers of fundamental tangible and intangible goods to our planet, from vital chemical substances (O<sub>2</sub>) to more economic issues (wood for economic activity etc.). Hence, for the comprehensive protection of these priceless ecosystems, immediate detection of forest fires is of vital importance, so that the firefighting forces may react in the least possible time before forest fires take large dimensions with unpredictable consequences. Primary aim of the paper is the immediate fire detection through establishing observatories across the entire area of a Greek island, Thasos. Vital objective is the selection of the most efficient observatories in terms of maximizing the visible area as well as their optimal location for avoiding significant degree of overlapping. According to the visibility analysis, the five most efficient observatories in terms of visible area and least degree of overlapping have been selected. In addition, establishing only 5 observatories, we will be able to monitor approximately 42% of the entire study area and its corresponding land cover types. Certainly, the visibility potential could be increased if the firefighting authority decides to establish more than 5 observatories, which means demand of additional financial resources.</p> <p><b>Keywords:</b> Forest fires, Fire detection, Visibility analysis, Observatories, GIS, Thasos, Greece</p> <p><b>References:</b></p> <ol style="list-style-type: none"> <li>1. Demir M., Kucukosmanoglu A., Hasdemir M., Ozturk T. and Acar H., 2009. Assessment of forest roads and firebreaks in Turkey. African Journal of Biotechnology. 8(18): 4553-4561</li> <li>2. Forest Service of Thasos island, 2012.</li> <li>3. Hellenic Military Geographic Service 2012</li> <li>4. Majlingova A., 2012 Opening-up of forests for fire extinguishing purposes. Croatian Journal of Forest Engineering. 33(1): 159-168</li> <li>5. Narayananaraj G. and Wimberly M.C., 2012. Influences of forest roads on the spatial patterns of human- and lightning-caused wildfire ignitions. Applied Geography 32: 878-888</li> <li>6. Oguz Coban H. and Eker M., 2010. Analysis of forest road network conditions before and after forest fire. In Proceedings of FORMEC 2010. Forest Engineering: Meeting the Needs of the Society and the Environment. July 11 – 14, 2010, Padova – Italy.</li> <li>7. Pompa-García M., Solís-Moreno R., Rodríguez-Téllez E., Pinedo-Álvarez A., Avila-Flores D., Hernández-Díaz C. and Velasco-Bautista E., 2010. Viewshed Analysis for Improving the Effectiveness of Watchtowers, in the North of Mexico. The Open Forest Science Journal, 2010, 3, 17-22</li> <li>8. Pompa-García M., Zapata-Molina M., Hernández-Díaz C., Rodríguez-Téllez E., 2012. Geospatial Model as Strategy to Prevent Forest Fires: A Case Study. Journal of Environmental Protection, 2012, 3, 1034-1038</li> <li>9. Sakellariou S., Samara F., Tampekis S., Sfougaris A. and Christopoulou O., 2015. Targeting to an efficient prevention strategy of forest fires, estimating the fire hazard on islands. The case study of Thasos island, Greece. International Journal of Advanced Engineering and Nano Technology (IJAENT). ISSN: 2347-6389, Volume-2 Issue-11, October 2015, pp. 27-32.</li> <li>10. Stergiadou A., Vales E. and Lubello D., 2007. Detailed Cartography System of fuel types for preventing forest fires. In Proceedings of 6<sup>th</sup> International workshop of the EARSeL special interest group on forest fires. Advances in remote sensing and GIS applications in forest fire management. Towards an operational use of remote sensing in forest fire management. 27-29 September 2007, Thessaloniki – Greece.</li> <li>11. Tampekis S., Samara F., Sakellariou S., Sfougaris A. and Christopoulou O. 2015. Mapping the Optimal Access to the Natural Resources based on Spatial Planning. The Case Study of Thasos Island, Greece. International Journal of Innovative Technology and Exploring Engineering (IJITEE) ISSN: 2278-3075, Volume-5 Issue-3, August 2015</li> <li>12. Wikipedia, 2015. <a href="http://el.wikipedia.org/wiki/%CE%98%CE%AC%CF%83%CE%BF%CF%82">http://el.wikipedia.org/wiki/%CE%98%CE%AC%CF%83%CE%BF%CF%82</a> (accessible on 12/3/2015)</li> </ol> |  | 4-12     |  |
| 3.    | <b>Authors:</b>   | <b>Rijuta Wagh, Janvi Shah, Khyati Shah, Sindhu Nair</b>   |          |  |
|       | <b>Paper Title:</b>   | <b>Profiling and Jury Selection Using Sentiment Analysis</b>   |          |  |
|       | <p><b>Abstract:</b> Jury Selection is the process of selecting 12 jury members from a pool of random people. These selected Jurors attend the trial proceedings and after the closing statements give a verdict on whether the defendant is guilty or not. For a defendant to be pronounced guilty or not guilty the jurors must unanimously vote on it. If there isn't a unanimous vote, then there is a mistrial. A mistrial can mean the whole case being restarted or the case being retired,</p>   |  | 13-15    |  |

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|---------------------|--|-----------------|--|---------------------|--|-------|
|                     | <p>meaning the case will not be pursued further. Thus the selection of the correct jurors is paramount to a decision in our favor, whichever side we may represent. We aim to develop a model in which the opinion of Twitter users is analyzed to create demographics which the lawyer can use for jury selection. Upon extracting data from Twitter based on hash tags pertaining to a certain case, the data undergoes an extensive cleaning process. We first classify the people according to age, sex, and profession and then plot graphs that can be statistically compared. This helps lawyers to make informed decisions and select a jury favorable to his/her case.</p> <p><b>Keywords:</b> Maximum Entropy, Naïve Bayes, Neural networks Sentiment Analysis, SVMs</p> <p><b>References:</b></p> <ol style="list-style-type: none"> <li>1. <a href="http://www.thejuryexpert.com/2011/09/trial-strategy-using-social-media-analytics/">http://www.thejuryexpert.com/2011/09/trial-strategy-using-social-media-analytics/</a></li> <li>2. Bollen, J., Pepe, A., &amp; Mao, H. (2009). Modeling public mood and emotion: Twitter sentiment and socioeconomic phenomena, Nov 2009.</li> <li>3. Andrew L. Maas, Raymond E. Daly, Peter T. Pham, Dan Huang, Andrew Y. Ng, and Christopher Potts. (2011). Learning Word Vectors for Sentiment Analysis. The 49th Annual Meeting of the Association for Computational Linguistics (ACL 2011).</li> <li>4. Ms. K. Nirmalal Devi, Ms. K. Mouthami, Dr. V. MuraliBhaskaran 'Sentiment Analysis and Classification Based on Textual Reviews', 2012.</li> <li>5. Kennedy, Alistair, and Diana Inkpen. "Sentiment classification of movie reviews using contextual valence shifters." Computational Intelligence 22.2 (2006): 110-125.</li> <li>6. B. Pang, L. Lee, and S. Vaithyanathan. Thumbs up? Sentiment classification using machine learning techniques. Proceedings of the 2002 Conference on Empirical Methods in Natural Language Processing (EMNLP), pages 79–86, 2002.</li> <li>7. A. Esuli and F. Sebastiani. Sentiwordnet: A publicly available lexical resource for opinion mining. pages 417–422, 2006.</li> <li>8. Tong. An operational system for detecting and tracking opinions in on-line discussion. In Proceedings SIGIR 2001 Workshop on Operational Text Classification, 2001.</li> <li>9. H. Witten &amp; E. Frank. Data Mining: Practical machine learning tools and techniques. Morgan Kaufmann, 2<sup>nd</sup> edition, 2005.</li> </ol>  |                 |  |                     |  |       |
| 4.                  | <table border="1"> <tr> <td><b>Authors:</b></td> <td><b>Karan Napanda, Sujil Shah, Ojas Kharbe, Sindhu Nair</b></td> </tr> <tr> <td><b>Paper Title:</b></td> <td><b>Analysing and Improving Student Performance Using Data Mining and Business Intelligence</b></td> </tr> </table> <p><b>Abstract:</b> Academic failures among university students have been the subject of concern in higher education community. Students drop out due to poor academic performance as early as in the first year of their university enrolment. Many interested parties' debate and try to find reasons for this poor performance. Consequently, the ability to predict a student's performance could be useful in many ways to stakeholders of higher education institutions. The proposed system puts forward data mining techniques used to identify the significant variables that affects and influences the performance of undergraduate students. Students' demographic and past academic performance data are then used to study the academic pattern. The knowledge is hidden among the educational data set and it is extractable through various data mining techniques. Such knowledge can be extracted from end semester exams, talents, ethics, grasping power, involvement in extracurricular activities, mid term tests and other educational data sets. Data classification algorithms coupled with decision trees assist in such extraction which can further be analyzed to produce semantic rules to predict student's final performance. The system utilizes semantic web technologies such as ontologies and semantic rules to enhance the quality of the educational content and the delivered learning activities to each student. This proposed system generates a type of confidence among the students and teachers. Hence, the system aims to analyse this extracted such data and mine educational data to produce graphical and statistical results which can help in the improvement of student's performance and also give tutors an overview of the proficiency of the student's learning abilities.</p> <p><b>Keywords:</b> Data Mining, ID3, Naïve Bayes, Perceptron Learning rule, Student Performance Analysis</p> <p><b>References:</b></p> <ol style="list-style-type: none"> <li>1. Brijesh Kumar Baradwaj, Saurabh PalMining Educational, Data to Analyze Students" Performance, International Journal of Advanced Computer Science and Applications, Vol. 2, No. 6, 2011</li> <li>2. J. Han and M. Kamber, "Data Mining: Concepts and Techniques," Morgan Kaufmann, 2000</li> <li>3. <a href="http://www.saedsayad.com/naive_bayesian.htm">http://www.saedsayad.com/naive_bayesian.htm</a></li> <li>4. Mrinal Pandey, Vivek Kumar Sharma, A Decision Tree Algorithm Pertaining to the Student Performance Analysis and Prediction, International Journal of Computer Applications (0975 – 8887) Volume 61– No.13, January 2013.</li> <li>5. Jia-Lin CHEN and Jyh-Yeong CHANG, Fuzzy Perceptron Learning and Its Application to Classifiers with Numerical Data and Linguistic</li> <li>6. Knowledge, Neural Networks, 1995. Proceedings., IEEE International Conference</li> </ol> | <b>Authors:</b> | <b>Karan Napanda, Sujil Shah, Ojas Kharbe, Sindhu Nair</b> | <b>Paper Title:</b> | <b>Analysing and Improving Student Performance Using Data Mining and Business Intelligence</b>                     | 16-19 |
| <b>Authors:</b>     | <b>Karan Napanda, Sujil Shah, Ojas Kharbe, Sindhu Nair</b>   |                 |  |                     |  |       |
| <b>Paper Title:</b> | <b>Analysing and Improving Student Performance Using Data Mining and Business Intelligence</b>   |                 |  |                     |  |       |
| 5.                  | <table border="1"> <tr> <td><b>Authors:</b></td> <td><b>Sanat Kumar Sahu</b></td> </tr> <tr> <td><b>Paper Title:</b></td> <td><b>Need for Eco-Friendly Architecture of Computing and Telecommunications Devices: Green Computing Perspective</b></td> </tr> </table> <p><b>Abstract:</b> Green computing, also called green technology is the present need for safe environment. Its major goals are to use computers related resources like - monitors, printer, storage devices, networking and communication systems - efficiently and effectively with minimal or no impact on the environment. There is need to study the effect of computing resources , e-waste and other hazardous element that are responsible for global warming and changing nature of climate. So that how we can go for the eco-friendly Information and communications Technology, which aim to reduce the emissions of the CO<sub>2</sub>, CFC and N<sub>2</sub>O gases. To be safe from all the hazardous and harmful effect on environment, in the present time use of eco-friendly computers and electronic products has to be adopted. Business industries, Government and Nonprofit organizations should learn and adopt the future of Green computing. In this paper I intend to review the state and art of e-waste and in addition examine the possible solutions for prospect research advice to make possible green Computing.</p> <p><b>Keywords:</b> Green computing, Energy Star, Kyoto Protocol, EPEAT, Green House, Global Warming, Environm.</p> <p><b>References:</b></p> <ol style="list-style-type: none"> <li>1. Shinde Sharmila , Nalawade Simantini, Nalawade Ajay, " Green Computing: Go Green and Save Energy", published in the International</li> </ol>   | <b>Authors:</b> | <b>Sanat Kumar Sahu</b>                                    | <b>Paper Title:</b> | <b>Need for Eco-Friendly Architecture of Computing and Telecommunications Devices: Green Computing Perspective</b> | 20-22 |
| <b>Authors:</b>     | <b>Sanat Kumar Sahu</b>  |                 |  |                     |  |       |
| <b>Paper Title:</b> | <b>Need for Eco-Friendly Architecture of Computing and Telecommunications Devices: Green Computing Perspective</b>   |                 |  |                     |  |       |



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**Authors:** Y. B. I. Shaheen, A. A. El Sayed  
**Paper Title:** Structural Behavior of Concrete Beams with Openings Reinforced with Innovative Composite Materials

**Abstract:** This research aims at developing structural behavior of Ferro-cement beams with openings. To accomplish this objective, an extensive experimental program was conducted. In addition theoretical mathematical models were investigated. The experimental program comprised casting and testing of fourteen reinforced concrete beams of dimensions 200x100x2000mm. These beams are organized in six groups, Group number one is the control group in which beams are cast using conventional reinforcement where beam B1 was reinforced with two steel bars  $\Phi 12$ mm at the bottom and two steel bars  $\Phi 10$ mm at top. Number of steel stirrups 16  $\Phi 8$ mm. Beam B2 is the same as B1 but with the addition of polypropylene fibers to the concrete matrix. Group two consists of casting three beams namely B3, B4 and B5. Beam B3 was reinforced as B2 but with two openings of dimensions 10x20 cm located at equal distances from the end of the beam. Beams B4 and B5 were reinforced with two steel bars  $\Phi 12$ mm at the bottom and two steel bars  $\Phi 10$ mm at the top with two and four layers welded steel meshes respectively. Group three comprises of casting and testing two beams B6 and B7 with two openings 10x20cm located at equal distances from the ends of beam and reinforced with one and two layers of expanded steel meshes respectively. Group four consists of casting and testing beams B8 and B9 which reinforced with one and two layers of fiber glass mesh for durability reason respectively. Group five consists of beams B10 and B11 having three openings and reinforced with four layers welded steel meshes and two layers expanded steel meshes respectively. Group six comprises beams B12, B13 and B14 with three openings and reinforced with four layers welded steel meshes, two layers expanded steel meshes and three layers welded steel meshes respectively. The test specimens were tested as simple beams under four line loadings on a span of 180cm. The performance of the test beams interms of strength, stiffness, cracking behavior, ductility, and energy absorption properties was investigated. The behavior of the developed beams was compared to that of the control beams. Two analytical models were modified and used to suit the developed composite beams one to predict the first crack load based on the well-known principles of strength of materials, and the other one to determine the ultimate strength and mode of failure based on the ultimate strength theory. The experimental results showed that high ultimate and serviceability loads, better crack resistance control, high ductility, and good energy absorption properties could be achieved by using the proposed beams. Comparison between the experimental results and the results obtained from the theoretical model showed that there is a close agreement for all beams. This agreement verified the validity of this model.

**Keywords:** Ferro-cement; Beams with openings; Experimental program; Structural behavior; Analytical model.

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| 7. | <p><b>Authors:</b> Adel Francis, Fabian Ardila</p> <p><b>Paper Title:</b> The Chronographic Protocol: Validation of Textures and Colors</p>  |       |
|    | <p><b>Abstract:</b> Graphical modelling is considered to be a suitable approach for displaying project data because of its ability to communicate information clearly and effectively. Despite this fact, little research has been undertaken in this area with regards to the construction sector, and current methods and software do not propose standard graphical protocols. Therefore, it has been up to each planner to individually set his or her own standard. To address these shortcomings, the Chronographical modelling proposes a standard protocol. This paper presents the validation of the first phase of this standard protocol for construction project scheduling. This phase proposes two ranges of light and dark colors and a graphical convention for textures and shapes. The validation process was performed through a case study that evaluates the texture convention and color limits followed by the application of the proposed graphical convention to a building scheduling. These validations were performed through case studies that evaluated the visual data and assessed the necessary mental effort for finding information on the schedule. The results demonstrate clearly that the proposed convention helps to improve the visual clarity while simultaneously seeking to diminish the mental effort necessary for finding information.</p> <p><b>Keywords:</b> Chronographical, Construction Project, Protocol, Schedule.</p> <p><b>References:</b></p> <ol style="list-style-type: none"> <li>1. M. Tory and T. Moller, "Human factors in visualization research," Transactions on Visualization and Computer Graphics, IEEE, vol. 10(1), 2004, pp. 72-84.</li> <li>2. H. G. Hawkins, "Evolution of the MUTCD: Part 2 - The Early Editions of the MUTCD", Institute of Transportation Engineers, 1992, pp.17-23.</li> <li>3. APA (2013). LBCS Background. Available: <a href="http://www.planning.org/lbcs/background">http://www.planning.org/lbcs/background</a></li> <li>4. M. Tory, S. 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| 8. | <p><b>Authors:</b> Bouchra Rahali, Mohammed Feham, Junwu Tao</p> <p><b>Paper Title:</b> Design of Ka-Band Substrate Integrated Waveguide Bend, Power Divider and Circulator</p> <p><b>Abstract:</b> Substrate Integrated Waveguide (SIW) features interesting characteristics for the design of microwave and millimeter-wave integrated circuits. In this study, a substrate integrated waveguide bend, power divider and</p>   | 44-47 |

circulator are conceived and optimized in Ka- band by Ansoft HFSS code. Thus, through this modeling, design considerations and results are discussed and presented. Compact size and planar form make these devices structure easily integrated in planar circuits.

**Keywords:** Rectangular waveguide; microwave components; SIW; bend; power divider; circulator; HFSS.

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**Paper Title:** Thermal and Solutal Buoyancy Effects on Viscous Dissipative and Chemically Reactive Fluid Flow past a Uniformly Moving Plate With Variable Suction

**Abstract:** An attempt is made to study the chemical reaction effect on an unsteady free convection flow past a semi-infinite vertical plate with viscous dissipation. The governing equations of motion, energy, and species concentration are reduced into a set of ordinary differential equations by applying regular perturbation technique and then solved analytically. The effects of various parameters on the velocity, temperature and concentration are presented and discussed through graphs.

**Keywords:** chemical reaction, free convection, viscous dissipation.

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