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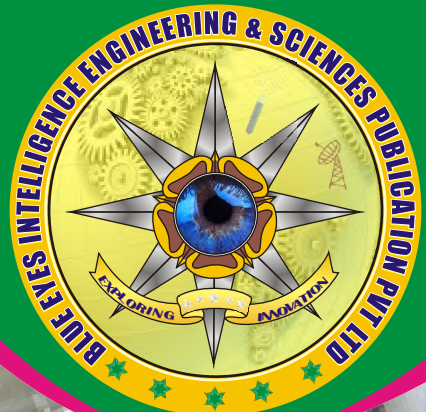
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	Paper Title:	Improvement in Efficiency of Recognition of Handwritten Telugu Script		
	<p>Abstract: In this paper we discuss Multi-Layer Perceptron (MLP) networks for recognition of handwritten Telugu Characters (HTCR). For training of MLP networks error back propagation algorithm is used. We present an automatic HTCR system using MLP networks. Many techniques have been used to recognize Telugu characters but accuracy of recognition is not so much efficient as efficiency of recognition of other scripts. Multilayer Perceptron neural network is used for recognition of characters of other scripts. We would like to use MLP for HTCR so that recognition can be done accurately and efficiently.</p> <p>Keywords: Handwritten Telugu character recognition (HTCR), Optical character recognition (OCR), Handwritten character recognition (HCR) multilayer Perceptron (MLP) neural network.</p> <p>References:</p> <ol style="list-style-type: none">1. J. Kanai, P. Stubberud, V. Kalluri, "Adaptive Image Restoration of Text Images that Contain Touching or Broken Characters," Proc. Int'l Conf. Document Analysis and Recognition (ICDAR '95), pp. 778-781, 1995.2. G. Burel, N. Rondel "Cooperation of Multilayer Perceptrons for the Estimation of Skew Angle in Text Document Images," Proc. Int'l Conf. Document Analysis and Recognition (ICDAR '95), pp. 1141- 1144, 1995.3. Eric Lecolinet, Richard G. Casey, "A Survey of Methods and Strategies in Character Segmentation," IEEE Transactions on Pattern Analysis and Machine Intelligence, Vol. 18 No. 7, July 1996.4. F. Kimura, M. Shridhar, Z. Chen, "Improvements of a lexicon directed algorithm for recognition of unconstrained handwritten words," Proc. of 2nd ICDAR, 1993.5. A. Kundu, P. Barl and Yang He, "Recognition of handwritten word: first and second order HMM based approach," Pattern Recognition, Vol.22, No.3, 1989.6. A. K. Dutta, "A generalized formal approach for description and analysis for major Indian scripts", J. Inst. Electronic Telecom. Eng. 30 (1984) 155-161.7. B.B. Chaudhuri, U. Pal, "A complete printed Bangla OCR system", Pattern Recognition 31 (1998) 531-549.8. B. Chatterjee, I. K. Sethi, "Machine Recognition of constrained Hand-printed Devnagari", Pattern Recognition, Vol. 9, pp. 69-75, 1977.9. H. Mahabala, R.M.K. Sinha, "Machine recognition of Devnagari script", IEEE Trans. Systems Man Cybern. 9(1979) 435-441.10. B. Chatterjee, K. Sethi, "Machine recognition of constrained hand-printed Devnagari", Pattern Recognition 9 (1977) 69-76.11. L. Dey, R. Bajaj, S. Chaudhury, "Devnagari numeral recognition by combining decision of multiple connectionist classifier", Sadhana 27 (2002) 59-72.12. Brijesh k.Verma, "Handwritten Hindi Character recognition Using Multilayer Perceptron and Radial Basis Function Neural Networks," IEEE International conference on Neural Networks, vol. 4, pp. 2111-2115, Nov. 1995.13. F. Kimura, U. Pal, Wakabayashi, "Handwritten Bangla Compound character recognition using Gradient feature," ICIT 2007, 10th international conference on information technology, pp. 208-213, Dec. 2007.14. B.B. Chaudhuri, D. Dutta Majumder, S.K. Parui, "A procedure for recognition of connected hand written numerals", Int. J. Systems Sci. 13 (1982) 1019-1029.15. A.F.R. Rahman, M. Kaykobad, "A complete Bengali OCR: a novel hybrid approach to handwritten Bengali character recognition", J. Comput. Inform. Technol. 6 (1998) 395-413.16. A.F.R. Rahman, M.C. Fairhurst, R. Rahman, "Recognition of handwritten Bengali characters: a novel multistage approach", Pattern Recognition 35 (2002) 997-1006.17. S. Datta, U. Pal, "Segmentation of Bangla unconstrained handwritten text", in: Proceedings of the Seventh International18. Rajasekaran S.N.S. Deekshatulu B.L. 1977 Recognition of printed Telugu characters. Comput. Graphics Image Processing, 6 pgs.335-360.19. Rao P. V. S. & T. M. Ajitha 1995 Telugu Script Recognition - a Feature Based Approach. Proce. of ICDAR, IEEE pgs.323-326., Figure 3: Symbol set for Telugu			
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	Paper Title:	Enhanced Authentication in Open ID Against Phishing Attacks		
	<p>Abstract: Multiple factors for authorization and authentication are essential for security of any software. To design and implement an Educational Academy Automation Software using OpenID and Role Based Authentication (RBA) System as dual layer of secure authentication techniques to ensure that only authentic users can access the predefined roles as per their Authorization level. But the OpenID authentication suffers from phishing attacks. How the OpenID is affected by Phishing attack and technique to block phishing attack in OpenID authentication procedure are addressed.</p> <p>Keywords: OpenID, RBA, Phishing.</p> <p>References:</p> <ol style="list-style-type: none">1. http://openid.net2. http://code.google.com/p/jopenid/wiki/QuickStart3. http://bkathir.wordpress.com/2009/12/10/how-to-use-openid-technology-in-our-web-application/4. https://www.blackhat.com/presentations/bh-usa-5. http://en.wikipedia.org/wiki/Phishing6. http://www.informationweek.com/attacks/phishing-attackers-use-subdomain-registration-services/d/d-id/1097432?			
	Authors:	Geethanjali Marri, P. Sri Padma, Ch. Ganapathi Reddy		
	Paper Title:	On $ V, \lambda _k$ Summability Factors of Fourier Series		
	<p>Abstract: In this paper a general theorem concerning the $V, \lambda _k$ summability factors of Fourier series has been proved.</p>			

3.	<p>Keywords: $V, \lambda _k$ Summability, Fourier series, Summability factors.</p> <p>References:</p> <ol style="list-style-type: none">1. CHENG, M. T., "Summability factors of Fourier series at a given point", Duke Math. J., 14, (1947), 405-410.2. JAIN, R. K., GANGULY, A. and MADAN, B. K., "On $V, \lambda _k$ summability factors of Fourier series", Ind. J. of Pure and App. Math., 9(1), (1978), 282-289.3. LEINDLER, L., "On the absolute summability factors of Fourier series", Acta. Sci. Math. (Szeged.) 28, (1967), 323-336.4. PATI, T., "The summability factors of infinite series", Duke Math. J., 21, (1954), 271-284.5. PATI, T., "Absolute Cesáro summability factors of infinite series", Math. Z., 78, (1962), 293-297.6. PATI, T., "On an unsolved problem in theory of absolute summability factors of Fourier series", Math. Z., 82, (1963), 106-114.7. SHARMA, P. L. and JAIN, R. K., "On $V, \lambda _k$ summability of a factored Fourier series", Mathematicki Vesnik, 7(22), No.1, (1970), 37-42.8. SINGH, N., "On absolute Cesáro summability of factored Fourier series", Riv. Mat. Univ. Parma (2), 8, (1967), 181-188.	9-12				
4.	<table><tr><td>Authors:</td><td>P. Sreenivasa Rao, M. Janani, P. Chenna Reddy</td></tr><tr><td>Paper Title:</td><td>TFRC for Congestion Control in Wired Environment</td></tr></table> <p>Abstract: The applications for which Internet is used has changed over the years. File transfer and e-mail are no longer the dominant applications of Internet. Multimedia streaming is one of the applications which is generating lot of revenues in Internet market. For these type of applications congestion has to be controlled. TCP has congestion control mechanisms but has lot of overhead associated with it making it not suitable for multimedia applications. UDP has no congestion control mechanisms and can lead to instability in the network. TCP Friendly Rate Control (TFRC) is a new protocol designed by Internet Engineering Task Force (IETF). It has congestion control mechanisms which enable it to be fair with TCP and prevents UDP from using its share of the bandwidth. In this paper performance of TFRC is compared with TCP and UDP in wired environment.</p> <p>Keywords: TFRC, TCP, UDP, ns-2.</p> <p>References:</p> <ol style="list-style-type: none">1. J. Postel, "Transmission Control Protocol", <u>RFC-793</u>, September 1981.2. J. Postel, "User Datagram Protocol", RFC 768, August 1980.3. Handley, Floyd, Widmer and Padhye, "TCP-Friendly Rate Control (TFRC): Protocol Specification", IETF RFC 5348, April 2008.4. Heekyoung Woo, Jong-won Lee and Seongho Cho, "ATFRC: Adaptive TCP Friendly Rate Control Protocol", International Conference on Information Networking (ICOIN), volume 2662, page 171-180, January 2003.5. Xiao fu, Wang RuChuan, Sun Lijuan, Yu JianPing, Hu Ting, "A Novel Video Transmission Evaluation Framework based on TCP-Friendly Congestion Control Mechanism", International Journal of Computer Network and Information Security, Vol.2, No.2, PP.19-25, December 2010.6. The VINT Project, "The ns Manual (formerly ns notes and documentation)",7. http://www.isi.edu/nsnam/ns/ns-ddocumentation.html, November 2011.	Authors:	P. Sreenivasa Rao, M. Janani, P. Chenna Reddy	Paper Title:	TFRC for Congestion Control in Wired Environment	13-15
Authors:	P. Sreenivasa Rao, M. Janani, P. Chenna Reddy					
Paper Title:	TFRC for Congestion Control in Wired Environment					
5.	<table><tr><td>Authors:</td><td>Damoah Dominic, Freda Hounkponou, Ronky Doh, Edward Ansong, Agyemang Brighter</td></tr><tr><td>Paper Title:</td><td>Promoting Physical Activity through Persuasive Technology</td></tr></table> <p>Abstract: The purpose of this project was to improve physical activity with the use of persuasive technology. The principal objectives were to study the need for physical activity; its challenges and opportunities. To examine the barriers and challenges in using persuasive technology for physical activity promotion. To study the issues of physical activity and propose a persuasive technology that can be used effectively by all types of individuals regardless of the age. The major findings derived from this study suggest that a lot of people have not been exercising even though they know the great benefits of physical activity. Based on the above mentioned problem I proposed a conceptual model to help change behavior by choosing the right technology for the right set of people.</p> <p>Keywords: Interactivity, Physical Activity, Persuasive Technology, Behavior Change, Psychology, Human Computer Interaction.</p> <p>References:</p> <ol style="list-style-type: none">1. (1999 – 2002). National Health & Statistics Report: Prevalence of Overweight among Children and Adolescents. United States.2. (2005). The Surgeon General's Call To Action To Prevent and Decrease Overweight and Obesity.3. Al, O.-K. e. (2008). Proceedings of Persuasive Technology. Third international conference. Oulou, Filand: lectures notes in computer science.Springer.4. Albaina, I. M., Visser, T., Mast, C. A., H, M., &Vastenburg. (2009)."Flowie: A Persuasive Virtual Coach to Motivate Elderly Individuals to Walk", Pervasive Computing Technologies for Healthcare.5. Bogost, I. (2007). Persuasive Games: The Expressive Power of Videogames. MIT Press.6. Booth, F.W., & al., e. (2002). Cost and Consequences of sedentary living. President's Council on Physical Fitness and Sports Research Digest Series 3, 16.7. Bravata, D., Smith-Spangler, C., &Sundaram, V. (2007). Using Pedometers to Increase Physical Activity and Improve8. Brown, D. (1992). Physical Activity, Ageing, and Psychological Well-being. Canadian Sports Science.9. Consolvo, Everitt, S. K., Smith, I., &Landay, J. (2006). Design requirements for technologies that encourage physical activity. In Proceedings of the SIGCHI conference on Human Factors in computing systems/Designing for Tangible Interactions. Montréal, Québec, Canada.10. Consolvo, S., McDonald, D. W., Toscos, T., Chen, M. Y., Froehlich, J., B.Harrison, et al. (2008). Activity Sensing in the Wild: A Field Trial of UbiFit Garden.2. Proceeding of the twenty-sixth annual SIGCHI conference on Human factors in computing systems. CHICAGO.11. Dillard, J. &. (2002). The Persuasion Handbook: Development in theory and practice. Thousand Oaks: CA: Sage Publications.12. Duval, Y. (2005, March 25). Consulté le December 16, 2010, surhttp://www.unescap.org/tid/projects/artnetbk05_surveydesign.pdf13. E., A., &Waterbot. (2005). Exploring Feedback and Persuasive Techniques at the Sink. CHICAGO.14. Festinger, L. (1954). "A theory of social comparison processes." Sage social science collection.15. Fogg, B. (2003). Using Computers to Change What We Think and Do. Dans B. Fogg, Persuasive Technology. Morgan Kaufmann.16. Fogg, B., &Eckles, D. (2007). Mobile persuasion. 20 perspectives on the Future. Stanford Captology Media.17. Fogg, C. (1999). Implementing your strategic plan: How to turn "intent" into effective action for sustainable change. New York: American	Authors:	Damoah Dominic, Freda Hounkponou, Ronky Doh, Edward Ansong, Agyemang Brighter	Paper Title:	Promoting Physical Activity through Persuasive Technology	16-22
Authors:	Damoah Dominic, Freda Hounkponou, Ronky Doh, Edward Ansong, Agyemang Brighter					
Paper Title:	Promoting Physical Activity through Persuasive Technology					

	<p>Management Association.</p> <p>18. Goal-setting Considerations for Persuasive Technologies that Encourage Physical Activityl. (2009). in proceedings of the 4th International Conference on Persuasive Technology (p. Vol. 350). ACM International Conference Proceeding.</p> <p>19. Gortmaker, S.L., & al., e. (1999). Reducing Obesity via a School-Based Interdisciplinary Intervention among Youth. Arch of Pediatric Adolescent Medicine 153.</p> <p>20. Health: A Systematic Review. Journal of American Medical Association, vol. 298, pp. 2231-2235.</p> <p>21. IJsselsteijn, W.A, Kort, d., Y.A.W, Midden, B, E., et al. (2006). Persuasive technology for human well-being: setting the scene. Persuasive 06 Eindhoven: Springer.</p> <p>22. International Conference: UbiComp 2006 (pp. 261-278). Orange County, CA, USA, Springer.</p> <p>23. Lin, J., Mamykina, L. ., Lindtner, S., Delajoux, G., &Strub, H. (2006). lFish'n'steps: Encouraging physical activity with an interactive computer. Proceedings 8th</p> <p>24. Lockton, D., & Stanton, h. D. (2010). The Design with intent Method:A design tool for influencing user behaviour. (Preprint version).</p> <p>25. Mathew, & A.P. (2005). Using the Environment as an Interactive Interface to Motivate Positive Behavior. chicago.</p> <p>26. Mazzeo, R., Cavanagh, P., Evans, W., &Fiatarone, H. (1998). Dans Exercise and Physical Activity for Older Adults (pp. pp. 992-1008). ACSM.</p> <p>27. Mueller, F., O'Brien, S., &Thorogood, A. (2007). "Jogging over a distance: supporting a "jogging together" experience although being apart." CHICAGO: Stanford Captology Media.</p> <p>28. National Institutesof Health—National Heart, L. a. (1998). Clinical guidelines on the identification, evaluation, and treatment of overweight and obesity in adults: The evidence report MD. NIH Publication 98-4083.</p> <p>29. Nied, R., & B. Franklin. (2002). Promoting and Prescribing Exercise for the Elderly. Dans American Family Physician: Practical Therapeutics, (pp. pp. 429-426).</p> <p>30. Schuit, A. (2006). Physical Activity, Body Composition and Healthy Ageing. Science & Sports.</p> <p>31. Takamura, J., & Williams, B. (1997). "Informal Caregiving: Compassion in Action". US Department of Health and Human Services.</p> <p>32. The Surgeon General's Call to Action to Prevent. (2005).</p> <p>33. Toscos, T., Faber, A., Connelly, K., &Upoma, A. M. (2008 PAGE 218-221). "Encouraging Physical Activity in Teens.Can technology help reduce barriers to physical activity in adolescent girls?" Pervasive Computing Technologies for Healthcare.</p> <p>34. U.S.Census Bureau, P. D. (2000). Projections of the total resident population by 5-year age groups, and sex with special age categories: Middle series, 2016 to 2020. U.S.Census Bureau, Population Division.</p>					
	<table><tr><td>Authors:</td><td>Ravindra P. M, Nagaraja P. S</td></tr><tr><td>Paper Title:</td><td>An Analytical Investigation on Deflections of Pratt Pattern Bridge Truss Posttensioned with External Tendons</td></tr></table>	Authors:	Ravindra P. M, Nagaraja P. S	Paper Title:	An Analytical Investigation on Deflections of Pratt Pattern Bridge Truss Posttensioned with External Tendons	
Authors:	Ravindra P. M, Nagaraja P. S					
Paper Title:	An Analytical Investigation on Deflections of Pratt Pattern Bridge Truss Posttensioned with External Tendons					
	<p>Abstract: Majority of the existing steel truss bridges all over the world are very old and more than 80 % of them inventoried in the United States are structurally deficient and/or functional obsolete. There is a need to strengthen these bridges in order to fulfill the present and future loading and traffic requirements. Posttensioning is one of the potential techniques to enhance the performance of these old steel bridges, as it creates redundancy in the structure and also, it is a simple, easy and economical method. In the present analytical study, determinate Pratt pattern of truss is posttensioned with external tendon layouts located below the bottom chord and their effectiveness in reducing deflection is studied. Stiffness matrix for truss member and two-drape tendon are formulated. Posttensioned truss analysis is carried out in three stages: in first stage, for dead loads, in the second stage for dead loads and posttensioning loads and further in the last stage for other loads. The final deflections are obtained by superimposing the results of second and the third stage. External posttensioning reduced deflection and the reduction is more with the increase in distance between the bottom chord and the tendon. When compared to internal posttensioning along the bottom chord, external posttensioning is more effective in reducing deflections.</p> <p>Keywords: Bridges, Chord, Deflection, Posttensioning, Redundancy, Tendon.</p> <p>References:</p> <ol style="list-style-type: none">1. Ayyub, B. M., Ahmed-Ibrahim, and David-Schelling (1990). "Posttensioned Trusses: Analysis and Design." Journal of Structural Engineering, ASCE, Vol. 116, No.6, pp 1491-1506.2. Belenya, E. (1977). Prestressed load bearing metal structures, MIR Publishers, Moscow.3. Berridge, P. S. A., (1957). "Prestressing strengthens a Wrought-Iron Bridge." Civil Engineering, pp 38-39.4. Berridge, P. S. A., and Lee, D. H. (1956). "Prestressing restores weakened truss bridge." Civil Engineering, Vol. 26, No. 9, pp 578-579.5. Gadolin, A. V. (1861). "Theory of Barrel reinforced by rings." Artillery Magazine, No. 12, pp 1033-1071.6. Karkare, B. S., Bonde, S. B., and Kamal, K. (1997). "Study on prestressed circular FRP tubes as tension member in an emergency portable bridge." International seminar on emergency bridges, Indian Institute of Bridge Engineers, Maharashtra State centre, Pune, India, pp 121-128.7. Langlois, J. D., Vatovec, M., Westover, P. L., and Preston, R. (2006). "Strengthening of curved-chord wooden trusses with posttensioned steel rods." Conference proceeding paper, structural Engineering and public safety, ASCE, pp 1-9.8. Phares, B.M., Wipf, T. J., Klaiber, F. W., Hawash, A. A., and Lee, Y.S. (2003). "Strengthening of steel girder bridges using FRP." Proceedings of the 2003 Mid-Continent Transportation Research Symposium, Ames, Iowa, August 2003, Iowa University.9. Ravindra, P.M., and Nagaraja, P.S. (2013). "Strengthening of determinate Pratt steel truss by the application of posttensioning along its bottom chord." The international journal of science and technoledge, Vol. 1, Issue 2, pp. 1-6.10. Swindlehurst, J., and Parkinson, F. H. (1993). Steel Structures, Bridge inspection and rehabilitation, Parsons Brinckerhoff, John Wiley and Sons, Inc, USA.11. Troitsky, M.S. (1990). Prestressed steel bridges theory and design, Bridge series, Van Nostrand Reinhold, New York, N.Y.12. Weaver, W., Jr., and Gere, J.M. (1986). Matrix analysis of framed structures, 2nd Edn., CBS Publishers and distributors, New Delhi, India.13. Yadlosky, J. M., Brungraber, R. J., and Kim, J. B. (1982). "Bridge Rehabilitation: An alternate approach." Journal of Structural division, ASCE, Vol. 108, ST1, pp 163-176.	23-28				
	<table><tr><td>Authors:</td><td>Amol Bhanage</td></tr><tr><td>Paper Title:</td><td>Design Simulation Comparison of Mono Leaf Spring Using SAE 1045 – 450– QT and E- Glass Epoxy Materials for Automotive Performance</td></tr></table>	Authors:	Amol Bhanage	Paper Title:	Design Simulation Comparison of Mono Leaf Spring Using SAE 1045 – 450– QT and E- Glass Epoxy Materials for Automotive Performance	
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Paper Title:	Design Simulation Comparison of Mono Leaf Spring Using SAE 1045 – 450– QT and E- Glass Epoxy Materials for Automotive Performance					
	<p>Abstract: This paper presents comparative simulation results of E-Glass Epoxy mono composite leaf spring for different layup as well for different thickness condition. First, simulation results have been performed for SAE 1045-450-QT steel material from weight saving and stress reduction point of view. Secondly, comparative simulation analysis performed between [0-45-(-45)-90-0], [0-45-(-45)-0], [0-0-45-(-45)-0] and [0-45-90] layup with different thickness from 9 mm, 10 mm, 12 mm, 13mm and 15 mm , considered according to selection of each layup thickness.</p>					

	<p>The design and comparative simulation analysis was done in ANSYS Software. Similar mechanical properties for E-Glass epoxy composite material were considered for all simulation procedure. The design constraints and meshing were also being similar for all conventional and composite models of leaf spring. Design and simulation results were predicted by considering linear static analysis and presented.</p> <p>7. Keywords: E-Glass Epoxy Composite, Layup, Simulation, ANSYS.</p> <p>References:</p> <ol style="list-style-type: none"> 1. B. Raghu Kumar, R. Vijaya Prakash and N. Ramesh, "Static analysis of mono leaf spring with different composite materials", Journal of Mechanical Engineering Research Vol. 5(2), ISSN 2141-2383, February 2013, pp. 32-37 2. K.A. Sai Anuraag & Bitragunta Venkata Sivaram, " Comparison of Static, Dynamic & Shock Analysis for Two & Five Layered Composite Leaf Spring", International Journal of Engineering Research and Applications (IJERA) ISSN: 2248-9622, Vol. 2, Issue 5, September-October 2012, pp.692-697 3. B.Vijaya Lakshmi, I. Satyanarayana, "Static And Dynamic Analysis On Composite Leaf Spring In Heavy Vehicle", International Journal of Advanced Engineering Research and Studies, E-ISSN2249–8974, Vol. II/ Issue I/Oct.-Dec.,2012, pp. 80-84 4. M. M. Patunkar, D. R. Dolas, "Modelling and Analysis of Composite Leaf Spring under the Static Load Condition by using FEA", International Journal of Mechanical & Industrial Engineering, Volume 1, Issue 1-2011 5. K. K. Jadhao, Dr. R.S Dalu, "Experimental Investigation & Numerical Analysis of Composite Leaf Spring", International Journal of Engineering Science and Technology (IJEST), ISSN: 0975-5462 Vol. 3 No. 6, June 2011, pp. 4759- 4764 6. J.A.M. Ferreira a, J.D.M. Costa, P.N.B. Reis, M.O.W. Richardson, "Analysis of fatigue and damage in glass-fibre-reinforced polypropylene composite materials" Composites Science and Technology 59 (1999),1461-1467 7. J. P. Karthik, K. L. Chaitanya and C. Tara Sasanka , " Fatigue Life Prediction of a Parabolic Spring under Non-constant Amplitude Proportional Loading using Finite Element Method Fatigue Life Prediction of a Parabolic Spring under Non-constant Amplitude Proportional Loading using Finite Element Method", International Journal of Advanced Science and Technology Vol. 46, September, 2012, 143-156 8. M.Venkatesan , D.Helmen Devaraj," Design And Analysis Of Composite Leaf Spring In Light Vehicle", International Journal of Modern Engineering Research (IJMER), Vol.2, Issue.1, Jan-Feb 2012, ISSN: 2249-6645, pp-213-218. 	<p>29-33</p>
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