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Journal Name:	British Journal of Mathematics & Computer Science
Manuscript Number:	Ms_BJMCS_20504
Title of the Manuscript:	Numerical Solution of Fuzzy Partial Differential Equations by Using Modified Fuzzy Neural Networks
Type of the Article	Original research papers

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This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound.

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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Compulsory REVISION comments	1. The manuscript is concerned with numerical solution of fuzzy partial differential equations by using modified fuzzy neural networks, which is interesting. It is relevant and within the scope of the journal. 2. However the manuscript, in its present form, contains several weaknesses. Adequate revisions to the following points should be undertaken in order to justify recommendation for publication. 3. Full names should be shown for all abbreviations in their first occurrence in texts. For example, 2-D in p.2, BFGS in p.17, etc. 4. For readers to quickly catch the contribution in this work, it would be better to highlight major difficulties and challenges, and your original achievements to overcome them, in a clearer way in abstract and introduction. 5. It is mentioned in p.1 that modified fuzzy neural network is adopted for obtaining numerical solution of fuzzy partial differential equations. What are other feasible alternatives? What are the advantages of adopting this particular method over others in this case? How will this affect the results? The authors should provide more details on this. 6. It is mentioned in p.2 that fuzzy trial function is adopted in this proposed method. What are other feasible alternatives? What are the advantages of adopting this particular approach over others in this case? How will this affect the results? The authors should provide more details on this. 7. It is mentioned in p.7 that the architecture as shown in Fig.(1) is adopted for fuzzy neural network. What are other feasible alternatives? What are the advantages of adopting this particular architecture over others in this case? How will this affect the results? The authors should provide more details on this.	The full names for all abbreviations are : 1. fuzzy differential equations (FDEs) 2. differential equation (DEs) 3. fuzzy partial differential equations(FPDEs) 4. fuzzy neural network model (FNNM) 5. modified fuzzy neural network(MFNN) 6. partially fuzzy neural network (PFNN) 7. BFGS (Broyden-Fletcher-Goldfarb-Shanno) . The topics mentioned in the notes



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	8. It is mentioned in p.9 that hyperbolic tangent function is adopted as the activation function for the hidden units of the fuzzy neural network. What are other feasible alternatives? What are the advantages of adopting this particular activation function over others in this case? How will this affect the results? The authors should provide more details on this. 9. It is mentioned in p.10 that the first order fuzzy differential equation is adopted for illustration of the solution steps. What are other feasible alternatives? What are the advantages of adopting this particular equation over others in this case? How will this affect the results? The authors should provide more details on this. 10. It is mentioned in p.12 that partially fuzzy neural network architecture is adopted for reducing the complexity of the learning algorithm. What are other feasible alternatives? What are the advantages of adopting this particular architecture over others in this case? How will this affect the results? The authors should provide more details on this. 11. It is mentioned in p.16 that a polynomial of first degree is adopted to replace each x in the input vector. What are other feasible alternatives? What are the advantages of adopting this particular approach over others in this case? How will this affect the results? The authors should provide more details on this. 12. It is mentioned in p.17 that two deviation errors are adopted to gauge the accuracy of the method. What are the other feasible alternatives? What are the advantages of adopting these particular deviation errors over others in this case? How will this affect the results? More details should be furnished. 13. It is mentioned in p.17 that BFGS quasi-Newton method is adopted to minimize the error function. What are other feasible alternatives? What are the advantages of adopting this particular method over others in this case? How will this affect the results? The authors should provide more details on this. 14. It is mentioned in p.17 that two problems are adopted in the study cases. What are the other feasible alternatives? What are the advantages of adopting these particular problems over others in	numbered from 5 to 14 which is : 1) Modified fuzzy neural network . 2) Fuzzy trial function . 3) Fuzzy neural network architecture . 4) Hyperbolic tangent function . 5) First order fuzzy differential equation . 6) Partially fuzzy neural network architecture . 7) A polynomial of first degree . 8) Two deviation errors . 9) BFGS quasi-Newton method 10) Two particular problems . During this research we talked to those topics briefly (to a reasonable extent) because the expansion in explaining these issues will lead to the expansion of research significantly .So we will rest on just mentioned .
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	this case? How will this affect the results? More details should be furnished. 15. The discussion section in the present form is relatively weak and should be strengthened with more details and justifications. 16. Some assumptions are stated in various sections. More justifications should be provided on these assumptions. Evaluation on how they will affect the results should be made. 17. There are some occasional grammatical problems within the text. It may need the attention of someone fluent in English language to enhance the readability. 18. Moreover, the manuscript could be substantially improved by relying and citing more on recent literatures about real-life applications of contemporary soft computing techniques in different fields such as the followings: ● Taormina, R., et al., "Neural Network River Forecasting with Multi-Objective Fully Informed Particle Swarm optimization," <i>Journal of Hydroinformatics</i> 17 (1): 99-113 2015. ● Zhang, J., et al., "Multilayer Ensemble Pruning via Novel Multi-sub-swarm Particle Swarm Optimization," <i>Journal of Universal Computer Science</i> 15 (4): 840-858 2009. ● Wang, W.C., et al., "Improving forecasting accuracy of annual runoff time series using ARIMA based on EEMD decomposition," <i>Water Resources Management</i> 29 (8): 2655-2675 2015. ● Zhang, S.W., et al., "Dimension Reduction Using Semi-Supervised Locally Linear Embedding for Plant Leaf Classification," <i>Lecture Notes in Computer Science</i> 5754: 948-955 2009. ● Wu, C.L., et al., "Methods to improve neural network performance in daily flows prediction," <i>Journal of Hydrology</i> 372 (1-4): 80-93 2009. ● Chau, K.W., et al., "A Hybrid Model Coupled with Singular Spectrum Analysis for Daily Rainfall Prediction," <i>Journal of Hydroinformatics</i> 12 (4): 458-473 2010. 19. In the conclusion section, the limitations of this study and suggested	Conclusion was amended as follows : In this paper, we presented a novel approach based on fuzzy neural networks for solving fuzzy partial differential equations. We demonstrate the ability of fuzzy neural networks to approximate the solutions of FPDEs . From the two examples it is clear that the modified fuzzy neural network method gives best results and better accuracy comparison with usual fuzzy neural network .As well , we can conclude that the method we proposed can handle effectively all types of FPDEs and provide accurate approximate solution throughout the whole domain and not only at the training set. Therefore, one can use
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	improvements of this work should be highlighted.	the interpolation techniques (such as curve fitting method) to find the approximate solution at points between the training points or at points outside the training set. better results may be possible if one uses more neurons or more training points. The main reason for using fuzzy neural networks was their applicability in function approximation. Further research is in progress to apply and extend this method to solve three-dimensional fuzzy partial differential equations .
Minor REVISION comments		
Optional/General comments		