

## Accepted Manuscript

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PII: S0736-5853(16)30312-4  
DOI: <http://dx.doi.org/10.1016/j.tele.2017.02.004>  
Reference: TELE 918

To appear in: *Telematics and Informatics*

Received Date: 1 July 2016  
Revised Date: 18 January 2017  
Accepted Date: 9 February 2017

Please cite this article as: Latha, C.B.C., Kirubakaran, E., Thangaiah, P.R.J., An Evolutionary Approach for Personalization of Content Delivery in e-Learning Systems based on Learner Behavior Forcing Compatibility of Learning Materials, *Telematics and Informatics* (2017), doi: <http://dx.doi.org/10.1016/j.tele.2017.02.004>

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## **An Evolutionary Approach for Personalization of Content Delivery in e-Learning Systems based on Learner Behavior Forcing Compatibility of Learning Materials**

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### **Abstract:**

This paper presents an evolutionary approach for personalizing learning content for individual learners from a very large database in an e-learning system. The proposed work improves the quality of the self-learning process in an adaptive e-learning system by providing the most suitable content for individual learners. The paper depicts the results of personalizing the learning process by tuning the compatibility level of the learning objects with respect to the learning style of the learner, the complexity level of the learning objects with respect to the knowledge level of the learner and the interactivity level of the learner based on the satisfaction level of the learner during the learning process using a modified form of genetic algorithm named as Compatible Genetic Algorithm (CGA). The proposed work improves the efficiency of the genetic algorithms by forcing compatibility in the learning objects which has not been implemented so far in existing systems. Forcing compatibility into the search space not only helps to reduce the search space but also fills the search space with better chromosomes. The results show improvement in scores of the learners and also in their satisfaction levels. A comparison with the standard algorithms shows improvement in execution time, number of

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