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# A NEURO-GENETIC FUZZY SYSTEM FOR THE PREDICTION OF STUDENT'S ACADEMIC PERFORMANCE

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#### ABSTRACT

The Nigerian education sector has over the years being facing serious problems of producing half-baked graduates or what others termed to be "educated illiterates" in various fields of human endeavour. The root cause of this issue is traced to poor academic performance evaluation of students seeking admission into tertiary institutions. The current model for evaluating the academic performance of admission seekers encompasses the Joint Admission and Matriculation Board (JAMB) and the West African Senior School Certificate Examinations (WASSCE), National Examination Council (NECO) or even National Board of Technical Education Council (NBTE). However, it has being argued that rather than JAMB and WASSCE or its equivalent, to evaluate admission seekers based on excellent correlated academic performances, the model has now  $b \in C$  one a citadel of bribery, corruption and gross academic malpractices. A model was developed to address this problem using tree based ensemble machine learning algorithms but we discovered that it did not sufficiently address the problem. In this work, we developed an Enhanced Neuro-Genetic Fuzzy Model for predicting students' academic performance using structured analysis and design methodology. The Neuro-Genetic was used for training and optimizing the proposed model. Furthermore, we utilized 1000 datasets of which 60%, @0% and 20% was used for training testing and validation of the proposed model. We implemented the proposed system with Java programming language and MySQL relational database as backend. Our obtained result showed better Grand Mean (x) of users' satisfaction when compared to the existing system result in terms of graphical user interface, accuracy of the prediction process, speed of the prediction process, speed in user validation and security. The proposed system Grand Mean obtained after comparative analysis are 2.74%, 1.78%, 2.71%, 1.67%, and 2.57% respectively, while those obtained by the existing system are 2.59%, 0.78%, 2.68%, 0.67%, and 2.52% respectively. In addition, the study also recommended the need for more application of machine-learning concepts to the prediction of student's academic performance. Machine learning techniques such as neuro-genetic fuzzy have proven to be efficient in predicting the academic performance of students.

KEYWORDS: Academic Performance, Fuzzy, Genetic, Neuro, Prediction

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