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Authors

Walker, Brea

Illipert, Anne

Davis, Raven

et al.

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Predicting Future Performance in an ITS system via Gradient Boosting Classification

Breya Walker

University of Memphis, Memphis, TN, United States

Anne lippert

University of Memphis, Memphis, TN

Raven Davis

University of Memphis, Memphis, TN

Zhiqiang Cai

The University of Memphis, Memphis, TN

Cheng Qinyu

The University of Memphis, Memphis, TN

Genghu Shi

The University of Memphis, Memphis, TN

Arthur Graesser

The University of Memphis

Abstract: Gradient Boosting Classification (GBC) models are well known to machine learning and artificial intelligence. Having the ability to predict user performance is imperative to the outcomes and purpose of an intelligent tutoring system. The Center for the Study of Adult Literacy (CSAL) intelligent tutoring system aims to improve reading comprehension in low-literacy adult learners. A GBC was applied to preliminary data gathered from high-literacy adult readers (N =1800 observations). Our model was shown high accuracy in predicting users' correct/incorrect responses to our multiple choice items. Specifically, users' reaction times and order of question presentation are important features of the model to consider. Less important features are difficulty of the item and the users reading ability. Our next steps are to apply GBC to high-literacy college students, followed by low-literacy readers, as a test set. Our eventual goal is to predict correctness prior to scoring.