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Using machine learning to predict AI acceptance, usage, and satisfaction

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Abstract

Artificial Intelligence (AI) is changing our daily lives. With the popularity of AI, researchers have begun to focus on the predictors of people's adoption of AI technology. However, most previous studies examined predictors separately without a comprehensive analytical framework. There was a lack of comparison of the differences in predictors of AI acceptance, use, and satisfaction. Moreover, most previous studies have primarily used traditional regression analysis methods, oversimplifying the association between predictors and outcome variables. In this study, we recruited 2,735 participants with a mean age of 21.12 years to participate in the survey. We adopted and compared six machine learning algorithms to identify predictors of AI acceptance, usage, and satisfaction. Random Forest was selected as the optimal model based on the highest AUC scores and other excellent metrics. Shapley additive explanations analysis revealed that perceived AI empathy, AI literacy, affective attitude, and AI self-efficacy were key predictors for AI acceptance. Perceived AI empathy, AI anxiety in learning, perceived AI trust, social interaction anxiety, and intolerance of uncertainty were key factors in predicting AI usage. AI acceptance, perceived AI empathy, AI literacy, and AI self-efficacy were the key predictors for AI satisfaction. These findings provide empirical evidence for better upgrading AI products and designing AI teaching courses.

Keywords: AI acceptance; AI usage; AI satisfaction; machine learning; SHAP