

Title: A Study on Drug Addiction Prediction in Bangladeshi Universities Using Advanced Machine Learning Algorithms

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Abstract: Infection by alcohol and drugs has become one of the bigger dangers posed to the youth of Bangladesh, and responsible action on the part of society is called for in order to save these tender minds. In a bid to solve this problem, a study was conducted on reducing drug abuse using machine learning concepts. The data were gathered from 307 students, wherein there are drug users and non-users aged between 17-35, with the final dataset containing 21 features. Hence, the strategy for drug abusers can be predicted with the probability of an individual's addiction to drugs by designing a machine learning strategy. It is based on the consultations and opinions obtained from medical professionals and drug addicts, together with literature reviews, that key risk factors of addiction are suggested in the present study. The collected data was pre-processed and fed for four machine learning algorithms: logistic regression, SVM, naïve Bayes, and XGBoost. The performances of each classifier, as evaluated by some of the notable metrics, turned out to be: 95.16% for SVM, 93.55% for logistic regression, 96.77% for naïve Bayes, and 98.39% for XGBoost. The present research informs about the prospects of machine learning for risk assessment in drug addiction among the youth of Bangladesh and contributes to more effective prevention strategies. The main goal of this research is to develop predictive models to identify a person's risk of drug addiction based on behavioral, social and health factors. It can be an early intervention, prevention effort and help to improve its condition.

Keywords: Drug addiction prediction Machine learning Youth of Bangladesh Risk assessment Behavioral and social factors

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