

Abstract

Drug side effects are an unwanted response by the body. This side effect becomes a serious problem for health and can cause effects such as nausea, headaches, and even death. Currently, the detection of side effects still uses clinical trials that are time-consuming and costly. In fact, it occurs often that possible side effects go unnoticed due to the limitations of the tested samples. The alternative is new, effective, and efficient detection, namely machine learning. However, one of the challenges in drug detection using machine learning is the high dimension of features, so the Hybrid Bat Algorithm (HBA) for feature selection can be applied to this. This study aims to predict drug side effects with a case study of metabolism and nutrition disorders by using the hybrid bat algorithm-ensemble method. In this study, the feature selection process utilized the hybrid bat algorithm, and an ensemble approach was employed to construct the prediction model using three techniques: Random Forest, AdaBoost, and XGBoost. Based on the experiments that have been carried out, the model created is successful in predicting drug side effects. XGBoost produces the most accurate model with the best performance, with accuracy metrics and F1-Score values of 0.743 and 0.811, respectively.

Keywords: Drug Side Effect, Ensemble, Hybrid Bat Algorithm, Machine Learning
