Side Effect Prediction by Using Bees Algorithm-Support Vector Machine: Case Study Reproductive System and Breast Disorders

Nicholas Davi Erlangga Putra Susilo [1], Isman Kurniawan[2]
Fakultas Informatika, Universitas Telkom, Bandung
fauzanbyan@student.telkomuniversity.ac.id,
ismankrn@telkomuniversity.ac.id

Abstract

The development of pharmaceuticals has significantly improved human quality of life and life expectancy. However, medicines can also cause potentially adverse side effects. Studies have shown that most drugs have the potential to produce side effects. Traditionally, evaluating drug side effects involves testing on experimental animals, but this approach has limitations in generalizing the results to humans. As a result, in silico methods have emerged as a promising alternative for predicting drug side effects without animal testing. While machine learning has shown potential in predicting drug side effects, the importance of feature selection has often been overlooked. This study aims to evaluate the effectiveness of the Bees Algorithm in feature selection and improve the performance of drug side effect prediction through hyperparameter tuning on a Support Vector Machine (SVM) model optimized with the Bees Algorithm. The best model, using the RBF kernel, achieved an accuracy of 0.6578 and an F1-score of 0.6561. The results are expected to enhance the understanding and management of drug side effects more efficiently.

Keywords: **Support Vector Machine, Bees Algorithm, Side Effects, Machine Learning, Drug**