



PROJECT REPORT
PERFORMANCE COMPARISON OF K-NEAREST
NEIGHBORS AND SUPPORT VECTOR MACHINE IN
DETECTING DENGUE FEVER SYMPTOMS

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ABSTRACT

The Aedes aegypti mosquito, the moustiquito that carries any few types of dengue virus as a result. Symptoms may be mild to severe, and it can take a long time before one is able to recognize this disease. In this study, the performance of resources was analyzed using Kaggle dataset for 820 records and having practically 18 features related to symptoms regarding k-Nearest Neighbors (KNN) as well as Support Vector Machine (SVM). In this study, the data were pre-processed in detail (including feature selection and cleaning) with k-fold cross validation to provide a stable model evaluation. Performance criteria accuracy, precision and recall of each algorithm are evaluated and compared(IOAAB) using F1 score. To gain a thorough frasp of the real-world implementation of every algorithm in dengue fever detection, more analysis is conducted on computing efficiency and model complexity. This study found that the SVM algorithm achieved effective hyperparameter tuning using the RandomizedSearchCV technique to identify dengue fever symptoms, reaching an accuracy of 98.26%, surpassing the KNN algorithm, which also performed effective hyperparameter tuning using GridSearchCV and achieved a similar accuracy of 98.26%. However, KNN had slightly lower detection for the positive class (Class 1), along with a better balance between precision, recall, and F1 score, which can contribute to more accurate early detection and timely medical intervention for dengue fever.

Keyword: Dengue Fever, Support Vector Machine, k-Nearest Neighbors, Symptoms

