



PROJECT REPORT
COMPARISON OF DECISION TREE AND SUPPORT
VECTOR MACHINE (SVM) FOR STUNTING RISK
PREDICTION IN TODDLERS

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2025**

Abstract

This research aims to evaluate and compare the effectiveness of two machine learning algorithms: Decision Tree and Support Vector Machine (SVM), in classifying stunting status in toddlers based on age, height, and nutritional status variables. The study utilizes data from Kaggle's "Stunting Baby/Toddler Detection" dataset containing 121,000 records. The research methodology includes data collection, data cleaning, preprocessing, model implementation, and performance evaluation using metrics such as accuracy, precision, recall, and F1-score. The results indicate that the Decision Tree algorithm outperforms SVM in classifying stunting status, achieving higher accuracy, precision, recall, and F1-score. Decision Tree effectively identifies patterns of stunting and is easier to interpret, making it a practical choice for healthcare applications. On the other hand, SVM with the RBF kernel demonstrates competitive performance, particularly in handling non-linear and high-dimensional data. However, its reliance on hyperparameter tuning and longer computational time makes it less practical for real-time applications. Therefore, Decision Tree is recommended for practical implementation in healthcare settings, whereas SVM is more suitable for research scenarios with complex data structures. The insights from this study can aid healthcare professionals in early stunting detection and intervention, contributing to improved child health outcomes. Future research may explore hybrid models combining both algorithms to further enhance classification performance.

Keywords: Decision Tree, SVM, stunting classification, machine learning, anthropometric measurements, nutritional status