

ABSTRACT

Rainfall classification plays a crucial role in numerous applications, including hydrological modeling, agriculture, and disaster management. In this study, we conducted a comparative analysis of the accuracy of two popular machine learning algorithms, namely Decision Tree and Support Vector Machine (SVM), for rainfall classification in Indonesia. The aim was to assess the performance of these algorithms in accurately classifying rainfall patterns, which is crucial for effective resource allocation and decision-making. The study utilized a comprehensive dataset comprising historical rainfall data from various regions across Indonesia. The dataset was then divided into training and testing sets to ensure robustness and generalization of the results. Both the Decision Tree and Support Vector Machine algorithms were implemented using well-established libraries in Google Colab. Performance metrics such as accuracy, precision, recall, and F1-score were utilized to evaluate the classification models. The experiments were repeated with different parameter settings to optimize the performance of the algorithms. The results obtained from the comparative analysis demonstrated that Decision Tree performed better with an *F1 Score* of 86% meanwhile Support Vector Machine yielded an F1 Score of 50%. Furthermore, the study identified the key factors influencing the accuracy of both algorithms, including the hyperparameter tuning and dataset characteristics. These findings contribute to the understanding of the strengths and weaknesses of Decision Tree and Support Vector Machine algorithms for rainfall classification in Indonesia. In conclusion, this study provides valuable insights into the accuracy of Decision Tree and Support Vector Machine algorithms for rainfall classification in Indonesia. These findings can assist researchers, practitioners, and decision-makers in choosing the most suitable algorithm for rainfall classification applications, leading to improved resource allocation and effective decision-making in various domains.

Keyword— **Classification, Rainfall, Decision Tree, Support Vector Machine**