

## Studi Algoritma *Ensemble Learning* pada EKG *Multi Channel* beserta Pengembangan *Prototype* Deteksi Aritmia

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### Abstract

Arrhythmia is a disease caused by heart rhythm disturbances. During an arrhythmia, the heart beats fast and slow with an irregular rhythm. Arrhythmias have many types that can be identified based on their characteristics. In recent years, many methods have been proposed to classify arrhythmias. There are many studies that propose classification algorithms that have low accuracy values and still use single channel ECG signals. To solve the problems above, this study proposes the development of an ensemble learning algorithm that supports increasing the accuracy of arrhythmia classification and can classify multi-channel ECG signals. The methods used in this research are literature study on arrhythmia classification, classification algorithm development, performance testing and ensemble learning algorithm analysis. After testing for specificity, sensitivity and accuracy, the highest specificity value for AF signal detection is 100% then the highest sensitivity is 100% and the highest accuracy is 99%, then for PVC signal detection the highest specificity value is 99% then the highest sensitivity is 99% and the highest accuracy is 99%. In the PAC signal detection model, the highest specificity is 96%, the highest sensitivity is 81% and the highest accuracy is 85%. The performance of the bagging and boosting algorithms is higher than the previous research, but the stacking algorithm still has low performance.

**Keywords:** Ensemble learning, Classification, Machine Learning, Electrocardiogram (ECG), Arrhythmia

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