A Project Abstract

On

Predicting Sleep Disorders with Machine Learning Algorithms

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by

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ABSTRACT

Sleep disorders, such as insomnia and sleep apnea, significantly affect individuals' quality of life and overall health. Traditional diagnostic methods are often time-consuming, costly, and prone to human error. This project aims to automate the classification of sleep disorders by utilizing advanced machine learning techniques, specifically Stacking and Voting Classifiers, to improve diagnostic accuracy and efficiency. The Sleep Health and Lifestyle Dataset, containing various health and lifestyle features, serves as the foundation for this study. The dataset is preprocessed through encoding and scaling techniques to prepare it for machine learning models.

Multiple machine learning models are trained and evaluated to predict the presence of sleep disorders, with the goal of identifying the most effective approach. The models are then integrated into a user-friendly web application developed with Flask, enabling users to input their health data and receive immediate predictions. This web-based tool offers a convenient and accessible method for users to check for sleep disorders without the need for expensive or time-consuming clinical tests.

Our results demonstrate that the Stacking Classifier achieves the highest accuracy, outperforming other models in predicting sleep disorders. This highlights the potential of machine learning in enhancing diagnostic processes, reducing costs, and improving accessibility to healthcare. Ultimately, the project contributes to better management and treatment of sleep disorders, enabling more accurate and timely diagnoses that can lead to improved patient outcomes.

Keywords: Sleep Disorders, Machine Learning, Stacking Classifier, Voting Classifier, Sleep Apnea, Insomnia.

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