NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

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BATCH NUMBER	BB - 8
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GUIDE	Y. Chandana
TITLE	Making Sleep Disorder Classification Using Optimized Machine Learning Models
DOMAIN/TECHNOLOGY	MACHINE LEARNING
BASE PAPER LINK	https://ieeexplore.ieee.org/document/10462120
DATASET LINK	https://www.kaggle.com/datasets/henryshan/sleep-health-and-lifestyle
SOFTWARE REQUIREMENTS	Windows 10,11 , 64 bit, Python 3.8, Operating System
HARDWARE REQUIREMENTS	Processor: 2.80GHz (Dual Processors) and GeForce GTX 1080 NVIDIA card Memory: 24GB

ABSTRACT	Sleep disorders significantly impact human health, and early diagnosis is essential for improving quality of life. In this study, we developed a machine learning model to classify sleep disorders based on a dataset containing health and lifestyle features such as sleep duration, physical activity, stress levels, and BMI. We employed various machine learning algorithms to build a robust classification model, focusing on improving predictive accuracy through feature engineering and optimization algorithm. The dataset was pre-processed to handle missing values and normalize features, ensuring optimal model performance. We tested multiple algorithms, including Gaussian naive bayes, knn, support vector machines, and random forests, to determine the most accurate model for detecting sleep disorders. Finally, the Gaussian Naive Bayes (GNB) model along with Genetic algorithm achieved the highest accuracy with 94%. Other models such as SVM, KNN, Logistic, Random Forest, MLP resulted the accuracy as 93%, 85%, 92%, 92%, 93% respectively. Our results indicate that the model successfully identified patterns within the dataset, providing reliable predictions that can be applied in realtime to assist healthcare professionals in diagnosing sleep-related conditions. By automating the classification of sleep disorders, this model can reduce manual diagnostic efforts and improve the timeliness of treatment. Moreover, this approach offers a scalable solution for integration into wearable health devices or clinical decision systems, ultimately contributing to the prevention of long-term health risks associated with untreated sleep disorders.

Signature of the student(s) Signature of the Project Coordinator Signature of the HoD