**MACHINE LEARNING BASED DIAGNOSTIC SYSTEM FOR SLEEP DISORDER**

A PROJECT-II REPORT SUBMITTED IN FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF

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**IN**

**COMPUTER SCIENCE AND ENGINEERING (AI &ML)**  
  


By

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**CERTIFICATE**

This is to certify that the Project-II report titled **“Machine Learning based Diagnostic System for Sleep Disorder”** is a bonafide work of following IV B.Tech. –II Sem. students in the Department of Computer Science and Engineering, Gayatri Vidya Parishad College of Engineering for Women affiliated to JNT University, Kakinada during the academic year 2022-23, in fulfillment of the requirement for the award of the degree of Bachelor of Technology of this university.

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# ­­­ ABSTRACT

This project leverages machine learning supervised models to address the pervasive global issue of sleep disorders, affecting 10-30% of the population. Utilizing algorithms such as Logistic Regression (LR), Random Forest (RF), and Support Vector Classifier (SVC), existing predictive modeling system demonstrates impressive accuracy of 89% in predicting risks for specific disorders, including Obstructive Sleep Apnea (OSA), Central Obstructive Mixed Sleep Apnea (COMISA), and insomnia. Evaluation metrics, such as the Area Under the Receiver Operating Characteristic (AUROC), showcase the effectiveness of these models in providing accurate predictions. This project employs a supervised machine learning approach to diagnose prevalent sleep disorder. Utilizing robust algorithms such as Support Vector Classifier (SVC), GaussianNB and Logistic Regression, our predictive modeling system showcases superior diagnostic capabilities. The incorporation of ensemble techniques, including ExtraTreeClassifier enhances the overall predictive accuracy. Evaluation metrics, such as ROC-AUC curves and F1 score, demonstrate the effectiveness of the models in diagnosing specific disorders like Insomnia and

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