

# **Abstract**

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## **Design and Implementation of a Real-time Sleep Stage Monitoring System for Narcolepsy Diagnosis**

A number of illnesses that affect people's daily life are caused by numerous sleep disorders which usually have common symptoms. In order for a physician to determine the correct diagnosis and its proper treatment, an overnight sleep analysis is usually performed. The scope of this paper is to design and implement a portable system that will assist Narcoleptic patients, in real-time, to aid them into leading a more productive life. The Feature Extraction Unit of the system is implemented on a Xilinx FPGA chip with a maximum error rate of 0.1618%. The classification method used is based on Support Vector Machine (SVM) algorithm, achieving an accuracy rate above 90%.