VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 018

PROJECT REPORT ON

"DESIGN AND OPTIMIZATION OF LOW POWER AND HIGH SPEED COMPARATOR FOR BIOMEDICAL APPLICATIONS"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

Submitted By

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

CERTIFICATE

*Certified that the project work entitled "***DESIGN AND IMPLEMENTATION OF LOW POWER AND HIGH SPEED COMPARATOR FOR BIOMEDICAL APPLICATIONS***" is a bona fide work carried out by*

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ABSTRACT

The design and construction of a high-performance data collection system are the main objectives of this project, with a particular emphasis on the integration of dynamic comparators and analog-to-digital converters (ADCs). With the use of dynamic comparators' speed and signal processing power, the system attempts to precisely measure and manipulate real-time data from a variety of sensors and equipment. When used in advanced real-time applications that interface with digital processing systems, communication systems, and instrumentation for data gathering and analysis, this technique guarantees excellent performance in situations that call for quick data processing and precise signal interpretation. For biomedical applications, efficiency, downsizing, and improved functionality, ADCs and comparators must be integrated into Very Large Scale Integration (VLSI) technology.

In order to meet the changing demands of patients and healthcare professionals, manufacturers are able to build medical devices with enhanced functionality in compact form factors by combining various electrical components onto a single silicon semiconductor microchip. In order to improve precision in biomedical data collection, this study aims to investigate current advances in ADC technology. It also develops dynamic comparators suited for biomedical ADCs, analyzes crucial factors for biomedical comparators, and optimizes the design for biomedical applications. By enhancing digital signal processing, this research hopes to improve overall system performance and reliability in healthcare settings, particularly for biomedical applications like biosignal monitoring and medical imaging.