VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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Mini Project Report on

"AI-DRIVEN IC VALIDATOR"

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

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

Submitted By

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CERTIFICATE

This is to certify that the following students,

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has submitted Project synopsis on **"AI-DRIVEN IC VALIDATOR"** for VI Semester B.E. in Electronics & Communication Engineering during the academic year 2023-24. The mini project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

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ABSTRACT

This project presents the development of an AI-driven system for the automated identification and validation of integrated circuits (ICs), designed to enhance educational experiences in electronics laboratories. The system integrates a Raspberry camera within a controlled dark chamber, coupled with a focused light source to capture high-quality images of ICs. These images are processed using the Gemini Pro AI model, which accurately identifies the ICs and retrieves detailed information, including their names, characteristics, and applications. A speech output module further enhances accessibility by providing audible results.

The primary objectives of the project were to create a user-friendly setup for automated IC validation, reduce manual errors, and improve the learning experience for students. Through rigorous system testing and optimization, the project demonstrated significant improvements in accuracy and efficiency. The system's implementation has been shown to streamline laboratory exercises, enabling students to engage more deeply with practical aspects of electronics.

Challenges encountered during development, including technical limitations and integration issues, were addressed through iterative refinement. The project's success highlights its potential impact on educational settings, providing a reliable and interactive tool that enhances both teaching and learning processes. Future work will focus on expanding the IC database and exploring advanced AI models to further improve the system's capabilities and applicability.