VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI - 590018

Mini Project Report

On

"REAL TIME COLOR DETECTION AND RECOGNITION SYSTEM"

A report submitted in partial fulfilment of the requirements for

COMPUTER GRAPHICS AND IMAGE PROCESSING LABORATORY (21CSL66)

In

Computer Science and Design

Submitted by

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CERTIFICATE

This is to certify that the COMPUTER GRAPHICS AND IMAGE PROCESSING Mini Project entitled **"REAL TIME COLOR DETECTION AND RECOGNITION SYSTEM"** has been successfully completed by

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the Bonafide students of Department Of Computer Science And Design Engineering, Alva's Institute of Engineering and Technology in DEPARTMENT OF COMPUTER SCIENCE AND DESIGN ENGINEERING of the VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI during the year 2023–24. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The Mini project report has been approved as it satisfies the academic requirements in respect of Mini Project work prescribed for the Bachelor of Engineering Degree.

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ABSTRACT

This project presents a color detection and recognition system that utilizes computer vision and text-to-speech (TTS) technology to identify and articulate colors in real-time. Using a webcam as the primary input device, the system captures video frames and processes them to detect the color at a user-specified point through a double-click interaction. The detected color is matched against a predefined list of color names and their RGB values stored in a CSV file. The most closely matching color name is then retrieved and verbally communicated using a TTS engine. The system also provides visual feedback by overlaying a semi-transparent rectangle on the video frame with the detected color and its corresponding name and RGB values. This information is dynamically displayed within a fixed interval to ensure accurate and timely updates.

In addition to color detection, the project features a user-friendly interface with enhanced visual elements. The interface includes a function to draw rounded rectangles around the detected color information, creating a polished and professional appearance. The system also ensures the rectangle and text are visible and appropriately positioned within the frame, adapting to various lighting conditions and color intensities. By integrating real-time processing, threading for efficient color detection, and adjustable frame rate settings, the project achieves a balance between performance and user experience. This color detection and recognition system demonstrates the practical application of computer vision and TTS technologies in creating interactive and accessible tools for various use cases, including educational purposes and assistance for visually impaired individuals.