

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI**



A Mini project report on

**“AUGMENTED REALITY SYSTEM USING ARUCO  
MARKERS FOR REAL-TIME IMAGE OVERLAY”**

Submitted in partial fulfillment of the requirements for the 6<sup>th</sup> semester

Computer graphics and Image processing lab

**BACHELOR OF ENGINEERING**

**IN**

**COMPUTER SCIENCE AND ENGINEERING**

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## **DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

### **CERTIFICATE**

This is to certify the project work entitled “**AUGMENTED REALITY SYSTEM USING ARUCO MARKERS FOR REAL-TIME IMAGE OVERLAY**” has been successfully carried out by **Mr. VAISHNAV BALAKRISHNAN NAIR**, bearing **USN 1SP22CS407**, of VI semester in partial fulfillment for the award of **Bachelor of Engineering in Computer Science and Technology** of the **Visvesvaraya Technological University, Belagavi** during the year **2023-24**. The project report has been approved as it satisfied the academic requirement in respect of the mini project work prescribed for Bachelor of Engineering.

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# ABSTRACT

This project presents the development of an Augmented Reality (AR) system using ArUco markers to overlay images onto real-world scenes. The core objective is to create a robust AR application that accurately detects multiple ArUco markers and superimposes corresponding images onto them. Utilizing OpenCV's ArUco module, the system is designed to recognize and track ArUco markers in real-time using a webcam or video feed. The project involves generating ArUco markers, setting up an image overlay mechanism, and implementing real-time detection and display functionalities. Key challenges addressed include marker detection accuracy, image overlay alignment, and ensuring the overlay maintains visual fidelity while adapting to marker rotation and scaling. The results demonstrate the system's capability to successfully overlay images on detected ArUco markers, preserving the original colors of the overlay while maintaining a clear view of the marker. This application showcases practical use in interactive AR experiences, with potential applications ranging from educational tools to interactive exhibits. Future work may include expanding the system's capabilities to handle a greater variety of markers, improving overlay precision, and integrating more complex AR features.

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