A

MAJOR PROJECT REPORT

ON

AUTOMATED SHOPPING WITH RASPBERRY PI PICO: A SOCIAL DISTANCED APPROACH THROUGH EMBEDDED SYSTEM TECHNOLOGY AND IOT CONNECTIVITY

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

BACHELOR OF TECHNOLOGY

IN

ELECTRONICS AND COMMUNICATION ENGINEERING

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(Approved by AICTE, Affiliated to JNTU Hyderabad, Accredited by NBA)

Kandlakoya(V), Medchal(M), Telangana – 501401

(2024-2025)

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CERTIFICATE

This is to certify that the major-project work entitled **"AUTOMATED SHOPPING WITH RASPBERRY PI PICO: A SOCIAL DISTANCED APPROACH THROUGH EMBEDDED SYSTEM TECHNOLOGY AND IOT CONNECTIVITY"** is being submitted by **B. SIDDHARTHA** bearing Roll No **218R1A04K7, B. HARI KRISHNA** bearing Roll No **218R1A04K8, C. MALLESH** bearing Roll No **218R1A04K9, CH. SANTHOSH KUMAR** bearing Roll No **218R1A04L0** in B.Tech IV-II semester, Electronics and Communication Engineering is a record Bonafide work carried out during the academic year 2024-25. The results embodied in this report have not been submitted to any other University for the award of any degree.

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DECLARATION

We hereby declare that the major project entitled **"AUTOMATED SHOPPING WITH RASPBERRY PI PICO: A SOCIAL DISTANCED APPROACH THROUGH EMBEDDED SYSTEM TECHNOLOGY AND IOT CONNECTIVITY"** is the work done by us in campus at **CMR ENGINEERING COLLEGE,** Kandlakoya during the academic year 2024-2025 and is submitted as major project in partial fulfillment of the requirements for the award of degree of **BACHELOR OF TECHNOLOGY** in **ELECTRONICS AND COMMUNICATION ENGINEERING FROM JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD.**

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ABSTRACT

The "Automated Shopping with Raspberry Pi Pico: A Social Distanced Approach through Embedded System Technology and IoT Connectivity" project aims to revolutionize the traditional shopping experience by incorporating advanced embedded system technology and Internet of Things (IoT) connectivity. Using the Raspberry Pi Pico as the core processing unit, this system facilitates a seamless, contactless shopping experience, reducing the need for physical interaction and maintaining social distancing protocols. The architecture integrates various components such as sensors for detecting items, real-time inventory tracking, and automated checkout processes.

RFID or barcode scanning, combined with a user-friendly interface, enables customers to add items to their virtual shopping cart without needing to touch shared surfaces. IoT connectivity allows for remote monitoring of stock levels and the delivery of real-time updates to both customers and store management. This solution not only ensures a safe shopping environment during the ongoing global health crisis but also streamlines the shopping process, promoting efficiency and convenience for consumers while enhancing operational management for businesses.

In modern shopping malls, customers enjoy a wide array of products and conveniences like discounts and home delivery. However, long queues during checkout on busy days often lead to dissatisfaction and wasted time. To enhance customer satisfaction, we propose implementing a Smart Trolley System. This system uses RFID technology embedded in trolleys to automatically scan and display product details and prices on an LCD screen as items are placed inside. This real-time tracking ensures transparency and accuracy in purchases. By automating checkout, the Smart Trolley System reduces waiting times at billing counters, improving operational efficiency and customer flow. This saves time for shoppers and enhances their overall experience by simplifying the shopping process.

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