

## Title Page (i)

**Title:** ATTENDRO: Smart Biometric + App-Based Attendance Management System using AI & IoT

**Candidate:** \_\_\_\_\_

**Diploma (Department):** Applied AI & ML

**Institute:** Rajarambapu Institute of Technology, Islampur

**Academic Year:** 2025–2026

**Guide:** \_\_\_\_\_

**Date of Submission:** \_\_\_\_\_

## Certificate of the Guide (ii)

This is to certify that the project titled “**ATTENDRO: Smart Biometric + App-Based Attendance Management System using AI & IoT**” has been carried out by [Student Name] under my guidance and supervision in partial fulfillment of the requirements for the award of the Diploma in **Applied AI & ML** at **Rajarambapu Institute of Technology, Islampur**, during the academic year **2025–2026**.

Guide Signature: \_\_\_\_\_ Date: \_\_\_\_\_

HOD Signature: \_\_\_\_\_ Principal Signature: \_\_\_\_\_

## Acknowledgement (iii)

I express sincere gratitude to [Guide Name] for guidance and feedback, to the **Department of Applied AI & ML** for providing laboratory resources, to my group members for their dedicated collaboration, and to my parents for their unwavering support throughout this project.

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## Abstract (v)

This project presents **Attendro**, an intelligent, portable, and offline-first biometric attendance system designed for educational institutes. Addressing the limitations of fixed biometric terminals and proxy-prone manual registers, Attendro introduces a **session-controlled** architecture where attendance can only be marked during active, authorized lecture sessions. The system integrates an **ESP32-based portable device** with a fingerprint sensor, a **Supabase (Cloud)** backend for real-time synchronization, and a **Faculty Web App** for session management.

Key innovations include **Time-Variant Batch Locking** (ensuring students only mark attendance for their specific batch), **Offline-First Synchronization** (queueing scans when Wi-Fi is unavailable), and **Context-Aware AI Rules** that validate scans against subject, class, and schedule constraints locally. This system satisfies AIML diploma requirements by leveraging biometric pattern recognition and rule-based decision intelligence to ensure data integrity and operational efficiency.

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### SYSTEM ARCHITECTURE – ATTENDRO

#### Presentation Layer

Admin Web

Faculty Web

Mobile App

ESP32 Device

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### DATABASE SCHEMA – ATTENDRO

#### profiles

**id**

email

role

full\_name