

COLLEGE CODE: 3114

COLLEGE NAME: MEENAKSHI COLLEGE OF ENGINEERING

DEPARTMENT: ELECTRONICS AND COMMUNICATION ENGINEERING

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***TECHNOLOGY - PROJECT NAME: IoT - SMART BUILDING WITH WASTE
MANAGEMENT AND URBAN AIR
QUALITY DETECTION.***

SUBMITTED BY,

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Title: Smart Building with Waste Management and Urban air quality detection

Abstract:

This project focuses on developing an integrated IoT-based system that combines smart building management, waste level monitoring, and environmental sensing for disaster prediction. It leverages modern sensors, microcontrollers, and AI-based data processing to enhance urban infrastructure. The system is modular, scalable, and aims to provide real-time insights, automation, and environmental intelligence for smarter and more sustainable urban living.

Title: IoT-Based Smart Building with Integrated Waste Management and Disaster Prediction System - Phase 5

1. Project Demonstration:

Overview:

The demonstration aimed to validate the real-time functionality of the complete IoT system, highlighting its automation, responsiveness, and integration efficiency across all modules.

The completed IoT-based system was demonstrated in a controlled environment to stakeholders, showcasing all modules - smart building automation, waste level monitoring, and environmental sensing. Key features such as real-time data updates, automated responses, and chatbot interaction were exhibited.

2. Project Documentation:

Overview:

Documentation was created to serve as a comprehensive technical reference and operational manual. It ensures continuity, maintainability, and scalability of the project in future implementations.

Comprehensive documentation was created, including circuit diagrams, source code, hardware schematics, AI model workflows, and integration steps. The documentation supports system replication, maintenance, and future upgrades.

3. Feedback and Final Adjustments:

Overview:

A structured feedback mechanism was implemented to collect insights from project testers. This feedback drove the final round of refinements to enhance reliability and user experience.

Post-demonstration feedback was collected from testers and faculty. Adjustments were made to improve sensor data accuracy, response speed, and user interface. Firmware updates and code refinements were implemented to stabilize operations.

4. Final Project Report Submission:

- Overview:

The final report outlines the system architecture, methodology, outcomes, and future prospects.

- Report Sections:

- Introduction and Problem Statement
- IoT Hardware Design and Integration
- AI and Chatbot Development
- Data Security and Testing Procedures
- Outcomes and Analysis
- Challenges and Solutions
- Future Scope

- Outcome:

The report serves as a reference for IoT smart infrastructure projects, providing design blueprints and insights for scalable smart city solutions.

5. Project Handover and Future Works:

- Overview:

The project was handed over to the sponsoring institution and technical team for possible real-world implementation and academic presentation.

- Handover Details:

- Complete hardware set with labeled components
- Software source files and firmware
- User manual and installation guide

- Final report and video demo

- Outcome:

The handover marks the end of the initial research and development cycle, paving the way for pilot testing and potential upgrades with solar power, AI enhancement, and expanded IoT coverage.

Our github repository link :

<https://github.com/udhayakumarnm27/gdudhayakumarnmmceece2327.git>