MITE
Invent Solutions

NEW AGE INNOVATION NETWORK
K-tech

Smart Home Solutions

INTRODUCTION

Project Category: Product and Service

TRL: Level 3

Project Description:

- The project involves leveraging wireless technologies to build smart systems using WiFi and Internet technologies (NodeJS, Socket I/O). These systems will control, monitor, and secure home elements such as lighting, climate, appliances, and security remotely or automatically.

PROBLEM STATEMENT

Problem: Despite technological advancements, smart home solutions remain inaccessible and unaffordable to the common man due to the high costs imposed by companies for home automation. For example, automating a home may cost between ₹35 lakhs to ₹1 crore, which most common people consider a luxury and therefore avoid exploring.

SOLUTION

Our solution aims to bridge this accessibility gap by developing cost-effective smart home solutions. These solutions will use affordable components and open-source technologies to reduce costs without sacrificing performance. The development process will follow an incremental approach, starting with a basic smart switch and gradually scaling to full home automation.

Key Features:

- **Cost Efficiency**: Focus on low-cost components and open-source platforms.
- **Incremental Development**: Start with individual switchboards, then scale to room control, and finally to full home automation. This allows users to adopt the technology at their own pace based on their budget.
- **In-House Design**: By developing servers and platforms internally, we eliminate expensive third-party subscriptions, further reducing costs.
- **User-Friendly Design**: The system is designed with a simple interface for ease of use, and traditional controls will remain intact for users who prefer manual operation.

METHODOLOGY

The project will be developed incrementally to allow users to adopt the technology in phases. The first phase will introduce a smart switch that is affordable and easy to install. Over time, additional functionalities—such as room automation and full home control—can be added, depending on the user's budget.

Key Phases:

- **Smart Switch**: Introduce a smart switchboard that can control basic home functions.
- **Room Automation**: Expand the solution to control a single room’s lighting, appliances, and climate.
- **Full Home Automation**: Once the system is fully developed, users will have control over all aspects of the home, including security systems like door locks and cameras, through a single platform.
- **Efficiency and Accessibility**: By using open-source platforms and in-house designs, the overall cost is reduced, making the solution accessible to a wider audience.

IMPLEMENTATION PLAN

Milestone 1: Develop a fully functioning smart switch that will serve as the foundation for the smart home system. This milestone will involve ensuring that the smart switch is integrated with the necessary WiFi and internet technologies (NodeJS, Socket.IO) and can control basic home functions like lighting.

Milestone 2: Develop a smart room controller that allows users to control all the appliances and devices in a room. This stage will also involve setting up the server infrastructure needed to support the smart home platform, enabling remote control and monitoring.

BUDGET DETAILS

Usage of Student Project Fund:

- **₹2.5 Lakhs** will be allocated towards developing the smart switch and room controller, setting up the supporting infrastructure, and purchasing the required components.

- The cost breakdown includes procuring affordable sensors, switches, and microcontrollers, as well as expenses for developing the in-house server and platform.

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TEAM DETAILS

Team Member 1: Sujal M H
Team Member 2: H M Virpakshaiah
Team Member 3: Vijeth Shetty
Team Member 4: Preetham U
Team Member 5: Sujnan Kumar
Mentor: Manjunath H