Smart Home Air Quality Monitor Project Proposal

Team Name	Sample
Category	
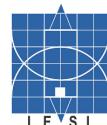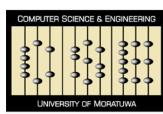
Problem Definition

Introduction

Air quality has become a critical concern, especially in urban areas, where pollution levels are alarmingly high. Prolonged exposure to poor indoor air quality can lead to respiratory issues, allergies, and other health complications. Despite this, many homeowners are unaware of the air quality inside their homes. We aim to solve this by creating a smart, IoT-enabled system to monitor and improve indoor air quality.

Problem Analysis

Indoor air pollution arises from cooking, cleaning products, pet dander, and outdoor pollutants entering the home. These factors make maintaining a healthy indoor environment challenging. Current solutions, such as air purifiers, often lack real-time monitoring and actionable insights. This gap represents an opportunity to create a device that actively tracks air quality and suggests or initiates corrective actions when needed.
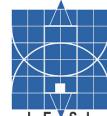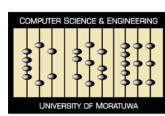
Proposed Solution

Proposed Product

The Smart Home Air Quality Monitor is an IoT-enabled device that provides real-time air quality readings. It measures pollutants such as PM2.5, CO_2, and VOC levels using advanced sensors and offers actionable insights via a mobile app. The device can also integrate with existing home systems, such as HVAC or air purifiers, to automate responses for maintaining optimal air quality.

Uniqueness of the Solution

Unlike existing air purifiers or monitors, our solution combines real-time data analysis with smart automation. The monitor not only provides air quality insights but also interacts with smart home devices to ensure proactive responses. Additionally, its portability allows it to be used in various rooms or carried on trips, making it adaptable to different environments.
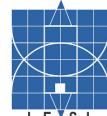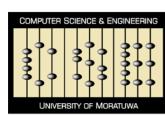
Technical Overview and Implementation

Technical Details

The device incorporates sensors to measure pollutants and environmental parameters like temperature and humidity. Data is processed using machine learning algorithms to identify trends and generate alerts. A Wi-Fi-enabled microcontroller ensures seamless communication with the mobile app and other smart home devices. The mobile app offers an intuitive interface for tracking air quality and controlling connected systems.
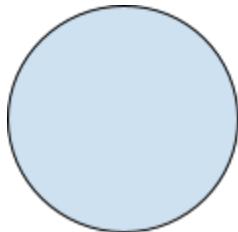
User Scenario

Meet Emma. Emma is a working professional with a young child. She sets up the Smart Home Air Quality Monitor in her living room. The device detects elevated VOC levels during cleaning and sends an alert to Emma's phone. It automatically activates the HVAC system to increase ventilation. Thanks to the proactive features of the Smart Home Air Quality Monitor, Emma is assured that her family breathes clean air without constant manual intervention.

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Team Details

Please provide the necessary details of your team. All fields, including photographs, are required
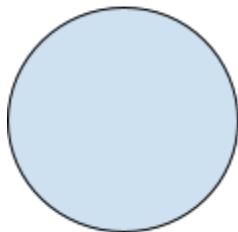
Team Leader
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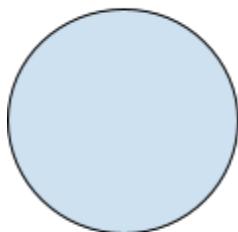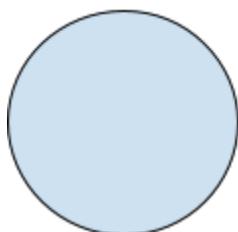
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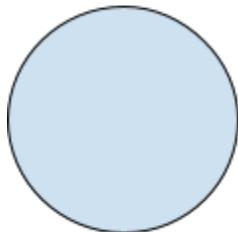
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Additional Information

Include any additional information or attachments that support your proposal.
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