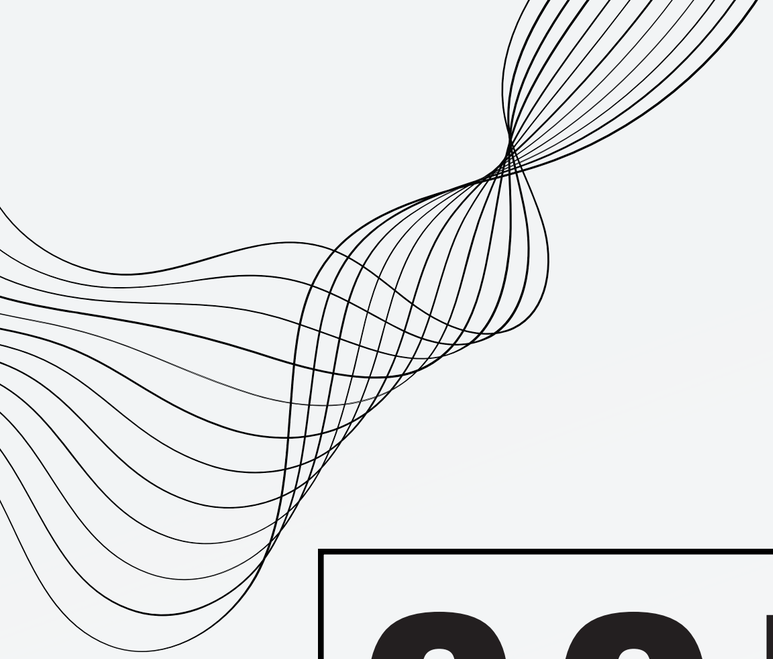
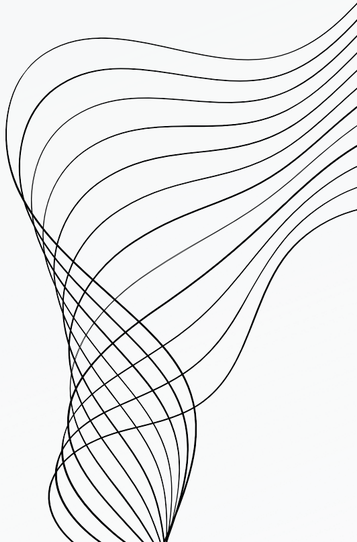


CODEKRAKEN



PROBLEM STATEMENT

The problem we aim to solve in this hackathon is to create a smart waste management system for urban areas. The current waste management systems are inefficient and often result in overflowing bins, littered streets, and environmental hazards. We need a solution that can optimize waste collection, reduce operational costs, and promote a cleaner and healthier environment.

SOLUTION

Our proposed solution is to develop a smart waste management system using IoT technology and data analytics. The system will consist of smart bins equipped with sensors, a central server for data processing, and a user-friendly mobile application for monitoring and management.

Goals and Benefits:

1. **Revolutionize Waste Management**
2. **Efficiency Improvement**
3. **Cost-Effectiveness**
4. **Environmental Benefits**

TECHSTACK

- Programming Language: Python
- IoT Devices: Raspberry Pi, Ultrasonic Sensors, GPS Module
- Cloud Computing: AWS IoT Core, AWS Lambda, AWS DynamoDB
- Data Analytics: Python Libraries (Pandas, NumPy, Scikit-learn)
- Mobile Application: React Native

UNIQUENESS

Our idea for a smart waste management system is unique due to

- Its real-time route optimization
- Environmental focus
- Data-driven insights
- User-friendly mobile app
- Scalability
- Seamless integration potential.

ARCHITECTURE:

1. IoT Devices:
- Raspberry Pi will be used as the edge device to connect the sensors and transmit data.
- Ultrasonic sensors will measure the fill-level of the bins.
- GPS module will track the location of the bins.

2. Data Collection and Transmission:
- Raspberry Pi will collect data from the sensors.
- AWS IoT Core will be used to securely transmit the data to the cloud.

3. Cloud Server:

- AWS Lambda functions will receive the data from IoT Core and process it.
- The processed data will be stored in AWS DynamoDB for further analysis.

4. Data Analytics:

- Python libraries such as Pandas, NumPy, and Scikit-learn will be used for data analysis.
- Machine learning algorithms will be applied to predict the fill-level of the bins and optimize waste collection routes.

5. Mobile Application:

- A cross-platform mobile application will be developed using React Native.
- The application will allow users to report overflowing bins, track waste collection schedules, and receive notifications.

UPDATED TO PRO

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