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Department:ECE

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FLOOD MONITORING AND EARLY WARNING SYSTEM

Team members:

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PHASE 1:

PROBLEM STATEMENT:

Floods are natural disasters that cause immense damage to lives, property, and infrastructure. The lack of timely information and early warnings exacerbates the impact of floods. Therefore, the problem statement is to create an efficient FMEWS that addresses the following challenges:

1. Timely Alerts: Develop a system that can detect flood conditions early and issue timely alerts to vulnerable communities.
2. Data Collection: Design mechanisms to collect real-time data related to rainfall, river water levels, soil moisture, and other relevant parameters.
3. Risk Assessment: Assess flood risk based on historical data, topography, and hydrological conditions.

4. Dissemination: Establish effective communication channels to disseminate warnings to residents, emergency responders, and local authorities.

DESIGN THINKING:

To address the problem statement, let's consider the following design principles:

1.Sensor Network Deployment:

- Install sensors strategically across flood-prone areas. These sensors should measure rainfall intensity, river water levels, soil saturation, and weather conditions.
- Telemetry data collection units should relay this information to a central monitoring system.

2.Data Analysis and Processing:

- Develop algorithms for processing sensor data.
- Use predictive models to estimate potential flood risks based on historical patterns.

3.Alert Generation:

- Based on data analysis, generate appropriate alerts for different risk levels (e.g., low risk, moderate risk, high risk).
- Alerts can be in the form of SMS messages, mobile app notifications, or sirens.

4.Community Engagement:

- Educate local communities about the FMEWS.
- Encourage residents to register for alerts.
- Provide clear instructions on evacuation routes and safety measures.