Real-time Flood monitoring System: An IoT based approach with ML algorithms

Introduction

Pakistan has faced severe floods, particularly in 2014 and 2022, causing massive destruction to infrastructure, agriculture, and human lives. Various IoT and ML-based models have been developed for flood prediction, but challenges remain. Inspired by previous research, our model integrates IoT for real-time data collection and ML algorithms for accurate flood prediction. It notifies users through an Android app, providing evacuation alerts and flood-prone areas, helping residents and authorities take timely action to mitigate damage.

Problem Statement

The project is dealing with creating an efficient model which will be a combination IoT technology, ML algorithms, android app, and servers for efficient data storing. IOT technology will be collecting real time data, ML algorithms will be analyzing data collected real time and the prediction made will be displayed though an android app.

Objective

The objective of this research study is to develop an excellent flood prediction and alarming system for people living rural area where the communication is also very critical.

Methodology

The process starts with reading water levels and flow using sensor. If the values exceed a predefined threshold, the system sends a notification to a mobile application, alerting users about a potential flood. The mobile application is then connected to receive real-time updates. The system continuously updates sensor readings, ensuring timely alerts and accurate monitoring. If the water levels remain below the threshold, the process loops back to continue monitoring. This cycle ensures continuous flood prediction and early warning notifications.