

Rising Waters: A Machine Learning Approach to Flood Prediction

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PROJECT NAME	Rising Waters: A Machine Learning Approach to Flood Prediction
MAXIMUM MARKS	2 MARKS

2.1 PROBLEM STATEMENT:

Floods are among the most destructive natural disasters, causing significant loss of life, property damage, economic disruption, and environmental degradation worldwide. With the increasing impacts of climate change, rapid urbanization, and deforestation, the frequency and intensity of flooding events have risen substantially. Traditional flood forecasting systems often rely on manual monitoring, static hydrological models, or delayed reporting mechanisms, which may not provide accurate, real-time, and location-specific predictions.

There is a critical need for an intelligent, data-driven system capable of analysing large volumes of environmental and meteorological data to predict flood occurrences with high accuracy and timeliness. Factors such as rainfall intensity, river water levels, soil moisture, temperature, drainage capacity, topography, and historical flood records contribute to flood risk. However, integrating and interpreting these diverse datasets efficiently remains a major challenge.

The problem this project aims to address is the development of a robust Machine Learning-based flood prediction model that can:

- Analyse historical and real-time environmental data
- Identify patterns and early warning indicators of flooding
- Predict the likelihood and severity of flood events
- Provide timely alerts to reduce risk and improve disaster preparedness

By leveraging advanced machine learning algorithms, data analytics, and predictive modelling techniques, the proposed system seeks to enhance early warning capabilities, support decision-makers, and ultimately minimize the socio-economic impact of floods.