Flooding is a devastating natural disaster with far-reaching impacts on lives, infrastructure, and economies. Traditional flood prediction methods, while effective, often suffer from high complexity, computational intensity, and limited accessibility, particularly for non-experts. To address these challenges, this project introduces a web-based Flood Risk Prediction Application that leverages advanced machine learning (ML) techniques to deliver accurate, user-friendly, and scalable flood risk assessments. The proposed system integrates Random Forest (RF), Multi-Layer Perceptron (MLP), and ensemble methods to analyze user-provided datasets, offering robust predictions with improved accuracy. Key features include: Intuitive web interface for seamless data upload (CSV/Excel formats), preprocessing, and visualization. Interactive dashboards displaying model performance metrics, feature importance, and geospatial flood risk maps. Scalable architecture built with Python, Flask, and modern ML libraries (Scikit-learn, Plotly, Folium), ensuring adaptability to diverse datasets and regions. A comprehensive feasibility study confirms the project's technical, economic, operational, and schedule viability, while system testing validates its reliability and performance. The application bridges critical gaps in existing systems by reducing dependency on specialized expertise, enhancing computational efficiency, and providing actionable insights through dynamic visualizations. Future enhancements may include real-time data integration, advanced deep learning models, and expanded geospatial capabilities. This project represents a significant step toward democratizing flood risk prediction, empowering communities, governments, and emergency responders with accessible, data-driven tools for proactive disaster management.

Keywords: Flood Prediction, Machine Learning, Web Application, Random Forest, MLP, Ensemble Methods, Disaster Management.