Hurricane Estimation Due to Heavy Precipitation in India Providing Advanced Warning

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Abstract

India is an agricultural nation, therefore rainfall and crop productivity play a major role in its economy. All farmers must be able to predict rainfall in order to analyse crop productivity. Predicting rainfall has a direct impact on crop productivity and farming methods, making it an essential component of the agricultural industry. Based on agricultural soil research, this work proposes a machine learning-based method for rainfall prediction and crop recommendation. The approach provides a novel way to improve farming efficiency by combining soil properties, historical agricultural practices, and meteorological data. Rainfall is numerically estimated using machine learning algorithms. Some of the most widely used machine learning techniques for rainfall prediction are the subject of this research. The suggested model makes use of supervised learning approaches, in which algorithms like Random Forest, Polynomial, and Simple Linear Regression are trained on a variety of datasets that include historical rainfall records, weather conditions, and soil characteristics. After that, the model forecasts rainfall for the next growing season and suggests the best crops to grow in order to maximize productivity and minimize resource consumption. Extensive trials using real-world datasets are used to assess the system's effectiveness, showing that it can accurately anticipate rainfall and recommend crops. Crop recommendation systems that incorporate soil analysis make sure that the crops chosen are suitable for the local soil conditions and for the season, which promotes sustainable farming methods. It is anticipated that this strategy will provide farmers with data-driven insights, facilitating better decision-making and raising agricultural output despite climate variability. It can determine which approach predicts rainfall with greater accuracy based on that comparison.

Keywords

Crop Recommendation, Machine Learning Algorithm, MobileNetV2, Soil analysis.