ABSTRACT

Agriculture is one of the most substantial areas of interest to society, as it produces a large portion of our food. It is also the most important sector influencing the economy of India. Predicting crop yield based on environmental, soil, water, and crop parameters has been a significant research topic for years. However, achieving consistently accurate results has been challenging due to the numerous factors that affect crop yield. Finally, the machine learning models receives an aggregate score for the actions performed by minimizing the error and maximizing the forecast accuracy. The system has been developed using the Random Forest machine learning algorithm. The crop yield prediction system is designed to enhance agricultural productivity by accurately forecasting crop yields based on inputs such as crop type, soil type, and cultivation area. It will forecast the crop yield in terms of yield per hectares. Beyond yield prediction, the system offers comprehensive recommendations on suitable crops and fertilizers and forecasts water requirements for optimal crop growth. Then, it will predict the water level of the crop. Additionally, it incorporates image analysis to diagnose crop diseases, providing timely interventions to safeguard yields. The system also serves as an information hub, displaying relevant government schemes available to farmers and contact details of regional agricultural officers, thereby supporting farmers in accessing resources and support. The system aims to improve decision-making, enhance productivity, and promote sustainable agricultural practices, ultimately contributing to food security and agricultural sector.