Intelligent Crop Analyser

My grandfather used to say that once in your life you need a doctor, a lawyer, a policeman and a preacher but every day, three times a day, you need a farmer"

- Brenda Schoepp

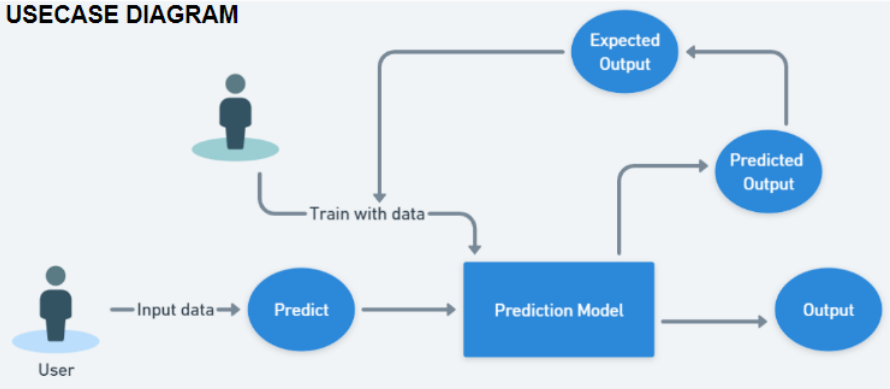
Introduction

India ranks second worldwide in farm outputs. As per Indian economic survey 2018, agriculture employed more than 50% of the Indian work force and contributed 17–18% to country's GDP. But the sector is currently in decline, prominently due to the losses that happen due to poor agricultural planning. India has 394.6 million acres of agricultural land which provides a huge task of monitoring them individually. As a solution to this, We propose an intelligent system that could take in certain input parameters such as soil test data and predict the suitable crops that can be planted in such an area and also help the farmers in identifying certain issues such as pests, drying crops,etd using artificial intelligence and computer vision.

Abstract

We aim at creating a platform for farmers, In which they would be able to provide their land details such as soil test data or location to collect satellite image data and then provide the farmer with information about the suitable crops that can be cultivated on that land, Alert them for the presence of unwanted elements such as pests, presence of diseases.

Use case diagram



Key features and future opportunities

- Continuous improvement: The model would use feedback loops to continually improve its predictions over time, incorporating new data sources and refining its algorithms based on past performance.
- Visualization and reporting: The model would provide easy-to-understand visualizations and reports, allowing farmers and other stakeholders to quickly understand the predicted yield and make informed decisions.
- Integration with other systems: The model would be integrated with other agricultural systems, such as agricultural and welfare research, to optimize crop growth and yield.

- Real-time monitoring: The model would be able to monitor crop growth in real-time, using data from sensors or drones, and adjust its predictions accordingly.
- Competitive advantage: Large-scale crop production is highly competitive, and using AI to predict crop yield can provide a competitive advantage by enabling farmers to make more informed decisions about their production processes. This can help them produce higher-quality crops at lower costs, ultimately giving them a competitive edge in the marketplace.
- Increased accuracy and efficiency: An AI-based crop prediction model can provide highly accurate and timely predictions on crop yield and quality, which can help farmers make informed decisions on how to optimize their production processes. This can help reduce waste, increase efficiency, and ultimately improve profitability.
- Risk mitigation: By using AI to predict crop yield, farmers can better anticipate potential challenges and risks, such as weather events, pest infestations, or disease outbreaks. This can help farmers take proactive measures to prevent or mitigate the impact of these risks, reducing the likelihood of crop failure.
- Improved resource management: By accurately predicting crop yield, farmers can better plan their resource allocation, such as water, fertilizers, and pesticides. This can help reduce waste and improve the efficiency of resource management, ultimately leading to cost savings.
- Accessibility: A web-based application of an AI-based crop prediction model makes it accessible to farmers regardless of their location. All they need is a device with an internet connection, such as a smartphone or a computer, and they can access the application anytime, anywhere.
- Scalability: A web-based application of an AI-based crop prediction model can be designed to be scalable, allowing it to handle a large number of users simultaneously. This means that farmers in different regions can use the application without overloading the system.
- Cost-effective: Developing a web-based application of an AI-based crop prediction model can be cost-effective compared to developing and deploying a stand-alone software application. This can make it more accessible and affordable for small-scale farmers who may not have the resources to invest in expensive technology.