



IOT PROJECT-BECE351E

Agri-Connect

EMPOWERING AGRICULTURE WITH IOT

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Objective



The agriculture sector's need for improved food consumption, quality, and sustainability has led to the adoption of information technology, specifically precision agriculture. The rapid growth of the Internet of

Things (IoT) in recent years has brought numerous benefits to agriculture. Cloud computing is crucial for the future of IoT agricultural applications due to the vast and diverse data collected by IoT devices.

Simultaneously, microcontrollers enhance the capabilities of IoT, adding new abilities to its applications in agriculture.



Crop Management Technologies

Precision farming: Benefits of data-driven decision-making, precision application of fertilizers, and resource allocation optimization

Remote sensing: Applications in crop yield prediction and monitoring

Data-driven tools: Role in enhancing crop management practices and increasing productivity

Impact of crop management technologies on yield, resource efficiency, and environmental sustainability

Pest Control and Monitoring Systems

Automated pest monitoring systems: Real-time detection and intervention strategies

Camera-based surveillance: Benefits in pest control and identification using Computer Vision

Positive impact of pest control technologies on crop health, reduced costs, and improved yields

Smart Irrigation Systems

Soil moisture sensors: Benefits in optimizing irrigation schedules and water management

Weather-based controllers: Role in adjusting irrigation based on climatic conditions

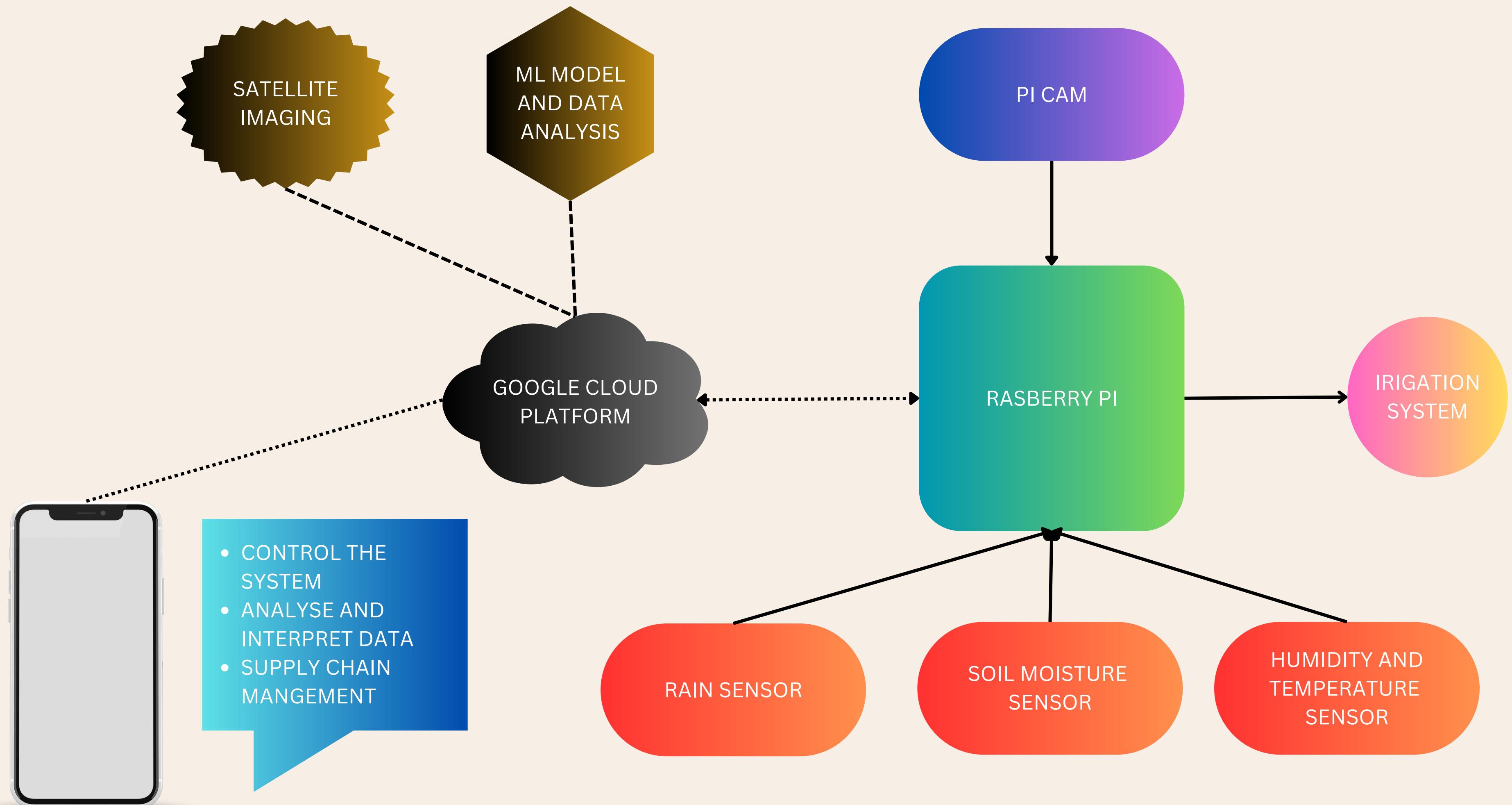
Precision irrigation techniques: Impact on water conservation and prevention of water stress in crops

Improved yields and resource efficiency through the adoption of smart irrigation systems

Crop recommendation based on predicted soil type



Our ML model for crop recommendation based on soil type aims to assist farmers in making informed decisions about crop selection. By analyzing soil characteristics, the model provides personalized recommendations for optimal crop choices. The model utilizes supervised learning techniques, including feature engineering and algorithm selection, to train and evaluate its performance. Implementing this ML model offers benefits such as improved productivity, resource management, and sustainability in agriculture, while promoting data-driven decision-making.





Electricity and Internet

IoT relies on stable and reliable internet connectivity. However, many rural agricultural areas may have limited or unreliable internet access, hindering the seamless functioning of IoT systems. Additionally, establishing the necessary network infrastructure and coverage across vast agricultural landscapes can be challenging and costly.



Cost

Implementing IoT systems in agriculture can involve significant upfront costs. The expenses include purchasing IoT devices, sensors, network infrastructure, and data management systems. For small-scale farmers or those with limited financial resources, the cost of adopting IoT technology may pose a barrier.

Data security and privacy

IoT systems generate and transmit a vast amount of data, including sensitive information about farms, crops, livestock, and farm operations. Ensuring the security and privacy of this data is crucial to prevent unauthorized access, data breaches, or misuse.



Data Overload and Interpretation

IoT systems generate vast amounts of real-time data. Managing and interpreting this data can be overwhelming, particularly for farmers who may not have the necessary data analysis skills. Extracting meaningful insights from the data and translating them into actionable decisions can be a challenge without appropriate data analytics tools or expertise.



Conclusion



Importance of technology in optimizing agricultural practices

Potential for increased productivity, reduced costs, and improved sustainability

Need for further research and development to overcome barriers and ensure widespread adoption



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