

IoT-Based Early Identification of Guava (*Psidium guajava*) Leaves and Fruits Diseases

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Abstract : Plant diseases have the potential to drastically diminish the quantity and quality of agricultural products. Guava (*Psidium guajava*), sometimes known as the apple of the tropics, is one of the most widely cultivated fruits in tropical regions. Monitoring plant health and diagnosing illnesses is an essential matter for sustainable agriculture, requiring the inspection of visually evident patterns on plant leaves and fruits. Due to minor variations in the symptoms of various guava illnesses, a professional opinion is required for disease diagnosis. Due to improper pesticide application by farmers, erroneous diagnoses may result in economic losses. This study proposes a method that uses artificial intelligence (AI) to detect and classify the most widespread guava plant by comparing images of its leaves and fruits to datasets. ESP32 CAM is responsible for data collection, which includes images of guava leaves and fruits. By comparing the datasets, these image formats are used as datasets to help in the diagnosis of plant diseases through the leaves and fruits, which is vital for the development of an effective automated agricultural system. The system test yielded the most accurate identification findings (99 percent accuracy in differentiating four guava fruit diseases (Canker, Mummification, Dot, and Rust) from healthy fruit). The proposed model has been interfaced with a mobile application to be used by smartphones to make a quick and responsible judgment, which can help the farmers instantly detect and prevent future production losses by enabling them to take precautions beforehand.

Keywords : early identification, guava plants, fruit diseases, deep learning

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