Integrated NavIC - IR analyzer for Soli and Crop Health monitoring

Breif Background

The NavIC system enables precise soil moisture estimation using GNSS-Interferometry Reflectometry, with multipath signals offering advantages over traditional methods by penetrating dense vegetation. However, vegetation affects signal propagation, necessitating vegetation-specific analysis using indices like NDVI to improve measurement accuracy

Application Sectors

- Agriculture

TRL 2

Tech/Prod. Summary

A comprehensive Model to improve soil moisture estimation and crop condition assessment by leveraging Navigation with the Indian Constellation (NavIC) multipath signals integrating with vegetation-specific analysis techniques.

Tech/ Product Description

This product is an integrated framework that combines NavIC-IR multipath signal analysis with vegetation-specific modeling to enhance soil moisture estimation and crop condition assessment. Key components include data pre-processing, vegetation segmentation, multipath signal analysis, machine learning modeling, and field validation. By leveraging NavIC-IR signals alongside vegetation analysis, the system delivers actionable insights for precision agriculture, water management, and ecosystem monitoring.

Market Potential

1. Precision Agriculture Market: USD 145-180 million in 2024 → USD 300-360 million by 2030
2. Global Agricultural IoT & Remote Sensing Market: USD 8.5 billion in 2025 → USD 15-16 billion by 2030

Value Proposition

1. High-Precision Soil Moisture Estimation
2. Non-invasive Crop Health Assessment

Impact - SDG:

SDG 2 - Zero Hunger: Imrpoves crop yield