Fusion of Satellite and Drone Imagery for Enhanced Cotton Crop Monitoring and Yield Prediction

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Abstract

This research focuses on the fusion of satellite and drone imagery to improve cotton production forecasting. As agriculture undergoes a technological revolution, integrating remote sensing technologies becomes imperative for precision farming. The study aims to explore the synergies between high-resolution satellite imagery and drone-based data acquisition in monitoring cotton crops. By combining these technologies, we can overcome the limitations of each platform and provide more accurate, timely, and comprehensive information for farmers and agricultural decision-makers. The research employs a multi-faceted methodology, including the deployment of drones equipped with various sensors and the utilization of satellite data from different spectral bands. The fusion of these datasets will facilitate real-time monitoring of crop health, identification of stress factors, and prediction of yield. The study will consider environmental variables, such as soil moisture, temperature, and precipitation, to enhance the predictive models. The outcomes of this research hold significant implications for the agriculture sector, contributing to sustainable farming practices and improved resource management. The integrated approach can empower farmers with actionable insights, leading to better decision-making, optimized resource allocation, and ultimately, increased cotton yield.