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Smart Tractor Reinvented for Safe Crops and Pesticides Control

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Abstract: *This study addresses the challenges faced by rural Indian agriculture due to labor shortages and the migration of rural populations to urban areas. To mitigate these issues and enhance agricultural productivity, a novel solution is proposed: a GPS-guided autonomous robotic tractor equipped with advanced agricultural functionalities. The system incorporates features such as intruder detection, security measures, irrigation facilities, pesticide spraying, and environmental monitoring capabilities.*

With agriculture being the primary occupation in many Indian states, the significance of this innovation cannot be overstated. By harnessing autonomous technology, the project aims to optimize crop yields while minimizing labor requirements. The robotic tractor's design integrates basic components including DC motors, intruder sensors, a WIFI camera, and a solar panel for sustainable charging. The mechanical design prioritizes simplicity and functionality to ensure efficient operation in farm fields.

Overall, this research contributes to the advancement of smart agriculture in rural India, offering a promising solution to the evolving challenges faced by the agricultural sector

Keywords: Smart agriculture, GPS guidance, Robotic tractor, Security measures, Pesticide spraying, Sustainable charging