PENDING

(IN202511047300)
System and process for early detection and classification of wheat rust disease

NEED

Over 70% of wheat yield losses in India are caused by delayed or missed diagnosis of rust infections. Manual inspections often miss early symptoms, leading to 35% quality drop at harvest. But what if diagnosis started before damage was visible?

MARKET ANALYSIS

The global crop disease detection market is expected to grow at a CAGR of 12.3%, reaching $6.1B by 2033. Indian agri-tech market sees 9.7% CAGR, led by smart farming, image analytics, and drone surveillance. [Sources: IMARC Group, AgFunder 2024]

TECHNOLOGY OVERVIEW

This system detects and classifies wheat rust types using high-resolution imaging, spatial attention mapping, and deep learning to analyze fine texture, lesions, and leaf deformation. Visual heatmaps show exact affected areas. A breakthrough in disease detection—without disturbing farming practices.

Target Industries

Smart Agriculture: AI-based crop disease diagnostics. Drone Service Providers: Imaging and edge analytics for field monitoring. Agri IoT Platforms: Integrated farm management systems with visual diagnostics and early action triggers.

TECHNOLOGY KEY FEATURES

High F1 accuracy scores (0.975–0.989), lesion-specific attention maps, deep feature extraction, drone/sensor compatible, onboard edge display, cloud dashboard integration, and rust-specific image augmentation—engineered for precision agriculture and early disease intervention.

[Read more here](#)

AT A GLANCE

SDG 2 (Zero Hunger), SDG 9 (Industry, Innovation, and Infrastructure), SDG 12 (Responsible Consumption and Production)

Technology is available for licensing/ co-development.

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