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IIT-I's AI-ML drones to boost infra safety


THE PROJECT TEAM

Our Staff Reporter
INDORE

Indian Institute of Technology Indore has developed a cutting-edge system that integrates Unmanned Aerial Vehicles (UAVs) with Artificial Intelligence (AI) and Machine Learning (ML) to inspect and detect anomalies in structures, especially in difficult-to-reach areas. This innovative system uses AI-ML technology to identify and classify cracks and other anomalies in structures such as high-tension wires, buildings, and roads in real-time. Traditional inspection methods often struggle with accurately detecting these issues, particularly in complex environments.

The project is led by Prof Abhirup Datta, along with a student Kumar Sheshank Shekhar and PhD scholar Harsha Avinash Tanti.

IIT Indore director Prof Suhas Joshi said, "This research work has made a significant breakthrough in the field of structural inspection and surveillance.

It has gained significant attention from experts, recognising its potential to advance inspection technology. As this system continues to be refined and applied, it is likely to have a significant impact on infrastructure monitoring and maintenance.

Continued on | P6

From **front page**

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This technology is particularly valuable for inspecting extensive road networks, cross-country gas pipelines, and high-tension power transmission lines. It has massive applications in maintenance and surveillance of infrastructures like roads, power lines, etc., as well as in defence and space."

The UAVs are equipped with advanced cameras and LiDAR sensors, which together provide detailed information about the location and size of any detected anomalies. One of the key features of this system is its ability to process data directly on the drone using edge computing, allowing for real-time decision-making. The drone's payload has been optimized to minimize space and power consumption, ensuring high performance and efficiency.

Contd. Page - 06