

IIT-I's intelligent receivers set to boost 6G, military comm security

TIMES NEWS NETWORK

Indore: The Indian Institute of Technology (IIT), Indore, is developing intelligent receivers that can automatically detect and decode key communication methods even in challenging conditions with noise or interference. This move is envisaged to bolster military communication security and render communication systems more cost-effective.

This endeavour is set to enhance 6G performance, strengthen military communication security, and optimise communication systems' cost-effectiveness by reducing the requirement for multiple receivers, the institute announced in a statement on Wednesday.

The project, being evaluated using software-defined radio (SDR) devices, receives support from the Ministry of Electronics and Information Technology (MeitY), the Council of Scientific and Industrial Research (CSIR), and the Department of Telecommunications (DoT) as part of a specialised 6G research initiative.

The technology, vital for 6G networks and military communications, will enable receivers to decode signals in difficult environments, such as when military transmissions are intercepted. By automatically identifying these methods, it ensures that important data can be gathered from unclear or noisy signals, making it crucial for intelligence operations, said the institute.

Professor Suhas Joshi, director of IIT Indore, said,

EUREKA MOMENT

"As the world moves toward 6G, communication systems will need to handle ultra-fast mobile internet and vast networks of devices, such as the Internet of Things (IoT). Traditionally, different receivers were required for different scenarios, making systems complicated and expensive. IIT Indore's technology aims to create a single receiver that can adapt to any situation, eliminating the need for multiple systems."

The institute stated that the innovation requires de-

ep learning algorithms, which help the receivers identify and decode signals in complex wireless environments. This is aimed at improving the use of radio frequencies, which are in high demand due to the growing use of 5G and 6G. These intelligent receivers will also save energy by cutting down on unnecessary data transmissions, the institute said.

Project lead Dr Swaminathan R from the Electrical Engineering Department, IIT-I, said, "This technology could revolutionise both telecommunications and military fields by improving efficiency and security. Unlike existing systems, IIT Indore's receivers can recognise modulation, coding, and interleaving methods together, a capability that hasn't been fully achieved before."

He said early tests showed promising results, accurately identifying different channel encoders and interleavers. Currently, the testing of these models in real-time and expanding them to cover a wide range of communication standards from 3G to 6G is underway.