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Researchers in Gujarat develop AI-powered device to identify disease-carrying mosquito species

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For redefining how communities track the diseases mosquitoes carry



With mosquito-borne diseases such as dengue and malaria continuing to pose a significant public health challenge in India, Associate Professor Kiran Trivedi from the University of Wollongong in Gujarat has developed a low-cost artificial intelligence (AI)-powered device that can identify disease-carrying mosquito species within seconds by analysing the sound of their wingbeats.

The portable AI device uses Tiny Machine Learning (TinyML) to accurately identify three of the world's most significant disease-carrying mosquito species—Aedes, Anopheles and Culex—without requiring internet connectivity or cloud-based computing.

By enabling rapid, on-site identification of mosquito species, the innovation has the potential to support faster and more efficient mosquito surveillance, particularly in regions where access to laboratory infrastructure may be limited.

Unlike conventional surveillance methods, which require mosquito larvae to be collected and analysed in laboratories to determine species, the AI-powered device identifies mosquitoes by their distinct acoustic signatures from wingbeats. Developed in collaboration with Professor Trivedi's former student Harsh Shroff, the embedded AI model processes sound locally on the device, enabling real-time species identification while operating on minimal power.

The model was trained using publicly available mosquito sound recordings and achieved an accuracy of 88.3 per cent. Built on a compact Arduino-based platform with an integrated microphone and display, the device provides a portable and affordable alternative for mosquito monitoring in the field.

The device also has the potential to be deployed as part of wider surveillance networks, enabling continuous monitoring of mosquito populations and generating real-time data to support public health planning and outbreak preparedness.