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IIT Guwahati pioneers groundbreaking speech reconstruction technology

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Patented technology can generate 'artificial voice' from vocal cord vibrations

Researchers at the Indian Institute of Technology (IIT) Guwahati have achieved a significant breakthrough in the field of speech technology with the development and patenting of 'LOQU', a novel method to generate human speech signals directly from vocal cord vibration signals.

During speech, vocal folds vibrate due to intrinsic laryngeal muscle movement. In some cases, like mutism from apraxia, individuals may have normal vocal fold vibration without sound production due to coordination issues in tongue or throat muscles essential for speech.

Derived from the Latin word for 'To speak or talk', this technology captures vocal fold movement without invasive procedures, utilising sensors placed over the throat. This innovative approach allows for the reconstruction of speech signals from vocal cord vibrations, offering promising applications for speech-impaired individuals and medical settings.

Speaking about the developed device, Prof. Samarendra Dandapat, Department of Electronics and Electrical Engineering, and lead of the Electro Medical and Speech Technology Group, IIT Guwahati, said, “This breakthrough holds immense promise for individuals facing speech impairments, offering a viable solution with clear and comparable speech signals, as demonstrated in comparison tests. With 'LOQU,' we aim to empower those in need and drive impactful innovations in the medical and communication domains.”

The prototype of LOQU has been developed on a laboratory scale at a cost of under Rs 2000.

The patented technology represents a significant milestone in speech research and innovation, with ongoing clinical testing aimed at further validating its effectiveness and exploring diverse applications in medical and communication fields.