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IISc & Aster-CMI Hospital design AI tool for screening nerve disorder

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Trained the model on one nerve, now going to extend it to all nerves in the upper and lower limbs



Researchers at the Indian Institute of Science (IISc), Bengaluru, in collaboration with Aster-CMI Hospital, have developed an artificial intelligence (AI) tool that can identify the median nerve in ultrasound videos and detect carpal tunnel syndrome (CTS).

Doctors currently use ultrasound to visualise the median nerve, and assess its size, shape, and any potential abnormalities. But unlike X-rays and MRI scans, it's hard to detect what's going on in ultrasound images and videos.

To develop their tool, the team turned to a machine learning model based on transformer architecture, similar to the one powering ChatGPT. The model was originally developed to detect dozens of objects simultaneously in YouTube videos. The team stripped the model's computationally expensive elements to speed it up, and cut down the number of objects it could track to just one – the median nerve, in this case.

Once trained, the model was able to segment the median nerve in individual frames of the ultrasound video. The model was also able to automatically measure the cross-sectional area of the nerve, which is used to diagnose CTS. This measurement is performed manually by a sonographer.

The next step for researchers would be to look for ultrasound machine manufacturers who can integrate this into their systems.