Docket #: S22-286

Neural Decoding of Attempted Speech

Stanford researchers have developed an innovative brain-machine interface aimed at restoring communication for individuals with paralysis by translating their attempted speech into text. The system captures neural activity associated with speech attempts using implanted microelectrodes and utilizes an advanced recurrent neural network to convert these brain signals into coherent text. This groundbreaking approach presents a promising avenue for enhancing communication capabilities, enabling individuals with paralysis to communicate effectively or enter text into computers.

The potential benefits of this invention are substantial, facilitating communication at unprecedented speeds approaching 60 words per minute with a word error rate of less than 10%. This enables users to articulate their needs and thoughts more naturally, significantly reducing frustration compared to traditional methods, which often rely on slower text entry techniques such as handwriting or point-and-click input. Ongoing research aims to refine the system further, enhancing its accuracy and adaptability across a broader vocabulary and diverse user scenarios.

Applications

- Providing individuals with paralysis the ability to communicate.
- Enabling start-of-the art text entry speed for computer applications.
- Facilitating real-time interaction in social settings.

Advantages

- Achieves communication speeds approaching 60 words per minute, significantly faster than prior-art methods.

- Offers a low word error rate of less than 10% in initial research trials.
- Utilizes advanced neural network technologies to enhance accuracy and responsiveness.

Publications

- Card, C.S. *et al.* An Accurate and Rapidly Calibrating Speech Neuroprosthesis. N ENGL J MED 2024;391:609-18.

Patents

- Published Application: WO2024036213
- Published Application: 20260253589

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