

Silent Speech Interface Using Manifold Decoding Of Biosignals

Tech ID: 33771 / UC Case 2024-594-0

ABSTRACT

Researchers at the University of California, Davis have developed a technology that provides a novel method for decoding biosignals into speech, enhancing communication for individuals with speech impairments.

FULL DESCRIPTION

The technology involves a computer-implemented method and system for decoding biosignals (e.g., those indicative of orofacial movements) into speech. It utilizes a unique approach that reduces the computational complexity, and thus the amount of time needed, to decode biosignals and translate them into synthesized speech.

APPLICATIONS

- ▶ Assistive technologies for individuals with speech impairments due to ALS, stroke, cancer, and other conditions.
- ▶ Human-computer interaction systems that require robust speech recognition capabilities.
- ▶ Medical devices and applications focused on rehabilitation and communication restoration.
- ▶ Can be used to decode/translate a wide variety of biosignals that are recorded from patients.

FEATURES/BENEFITS

- ▶ Addresses the variability of biosignals across individuals and sessions, enhancing accuracy and robustness.
- ▶ Reduces the computational demand and need for extensive retraining typically associated with neural network-based approaches.
- ▶ Improves accessibility for individuals with speech impairments due to various causes, including neurological diseases and physical damage.
- ▶ Facilitates real-time communication by efficiently decoding complex biosignals into speech.
- ▶ Overcomes communication barriers faced by individuals with dysarthria, dysphonia/aphonia, and other speech impairments.
- ▶ Addresses the challenge of signal variability due to individual anatomical and physiological differences.
- ▶ Reduces the high computational cost and inefficiency of existing neural network approaches in adapting to new individuals.

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OTHER INFORMATION

KEYWORDS

machine learning, voice
 prostheses, human
 diagnostics, medical
 devices, assistive
 communication

CATEGORIZED AS

- ▶ **Communications**
 - ▶ Other
- ▶ **Computer**
 - ▶ Hardware
 - ▶ Other
- ▶ **Medical**
 - ▶ Devices
 - ▶ Disease: Central Nervous System
 - ▶ Other

PATENT STATUS

Country	Type	Number	Dated	Case
Patent Cooperation Treaty	Published Application	WO 2025/235580	11/13/2025	2024-594

Additional Patent Pending

► **Sensors & Instrumentation**

- Biosensors
- Medical
- Other

RELATED CASES

2024-594-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- [Novel Auditory Diagnostic](#)
- [Using Automatic Speech Recognition to Measure the Intelligibility of Speech Synthesized from Brain Signals](#)

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