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# 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.

## CONTACT

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## INVENTORS

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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
- ▶ **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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