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.

PATENT STATUS

Patent Pending

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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

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ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

▶ Novel Auditory Diagnostic

▶ Using Automatic Speech Recognition To Measure The Intelligibility Of Speech Synthesized From Brain Signals