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

Prabakaran Soundararajan
psoundararajan@ucdavis.edu
tel: .

INVENTORS

- Gowda, Harshavardhana
- Miller, Lee M.

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

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

University of California, Davis
Technology Transfer Office
1 Shields Avenue, Mrak Hall 4th Floor,
Davis,CA 95616

Tel:
530.754.8649
techtransfer@ucdavis.edu
https://research.ucdavis.edu/technology-transfer/
Fax:
530.754.7620