Algorithm for real-time speech separation from a mixed sound signal

Technology #cu17276

This technology is an algorithm called Deep Attractor Network (DANet) that isolates multiple sound sources from a single channel recording to enable individual speech recognition.

Unmet Need: Method to separate a mixed sound signal into single channels

A significant challenge in automatic speech recognition is understanding speech in the presence of multiple speakers. Current methods map input audio signals to a fixed set of unique target outputs. However, these methods cannot reliably isolate speech signals when the number and order of speakers is unknown or changes, making them impractical for real-world applications.

The Technology: Real-time automatic speech recognition of multiple simultaneous speakers

This technology is an algorithm called Deep Attractor Network (DANet) that separates a mixed sound signal into individual channels. Mimicking natural human sound perception, this technology utilizes attractor points to cluster input sounds and isolate individual speakers from a single mixed sound source. In contrast to existing methods, DANet is not limited by the number of speakers in the input audio signal. Furthermore, this technology can be implemented in real-time, enabling incorporation into devices such as hearing aids or earphones for improved speech separation and noise cancellation.

This technology has been demonstrated to cleanly separate audio tracks of multiple simultaneous speakers into individual channels, as demoed here.

Applications:

- Speech recognition software
- Hearing aids and other speech enhancement devices
- Noise reduction in voice communications and noise-cancelling headphones
- Music enhancement (vocal track isolation)
- Security software or auditory forensics
Advantages:

- Automatic speech recognition
- Real-time implementation
- Insensitive to speaker number or order
- Faster processing and better performance than competitors

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Patent Information:

Patent Pending

Related Publications:


Tech Ventures Reference:

- IR CU17276
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