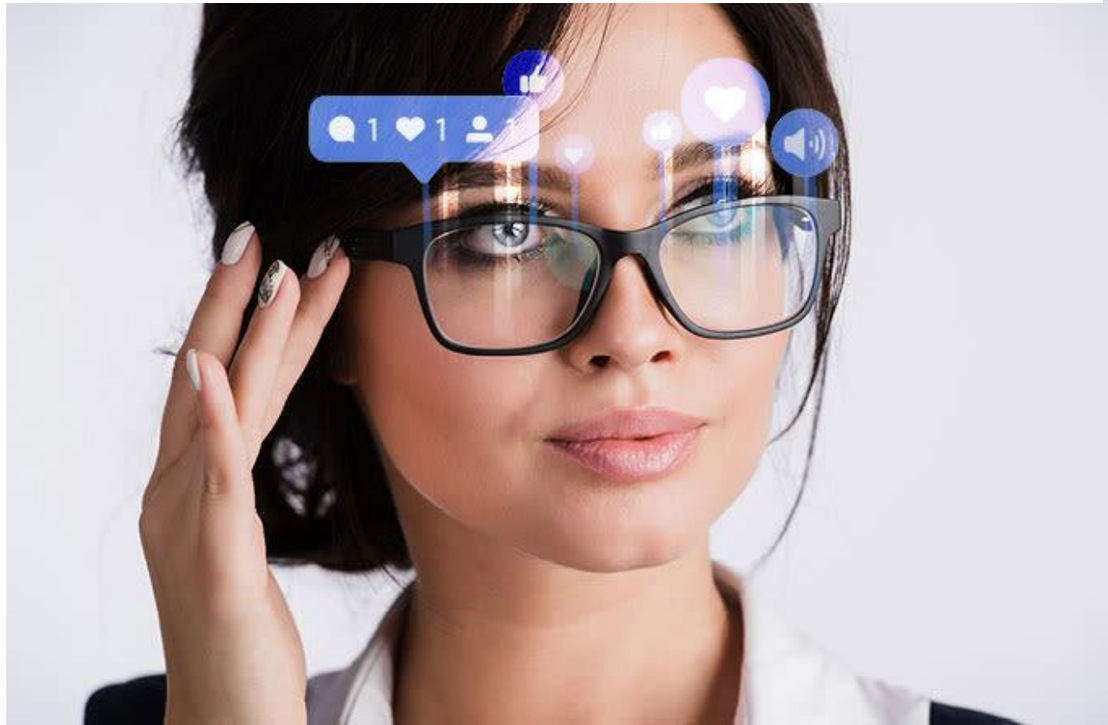
# Prof. Israel Cohen – Research

## Smart Glasses as Assistive Listening Devices

- Assistive listening smart glasses represent a $7.5B market opportunity by 2026.
- They serve 430M people worldwide with disabling hearing loss.
- These devices blend AR technology with hearing assistance, addressing both visual and auditory needs simultaneously.



# Engineering Challenges

## Audio Capture

ROI beamforming microphone arrays with 4-8 MEMS mics capture directional sound.

## Signal Processing

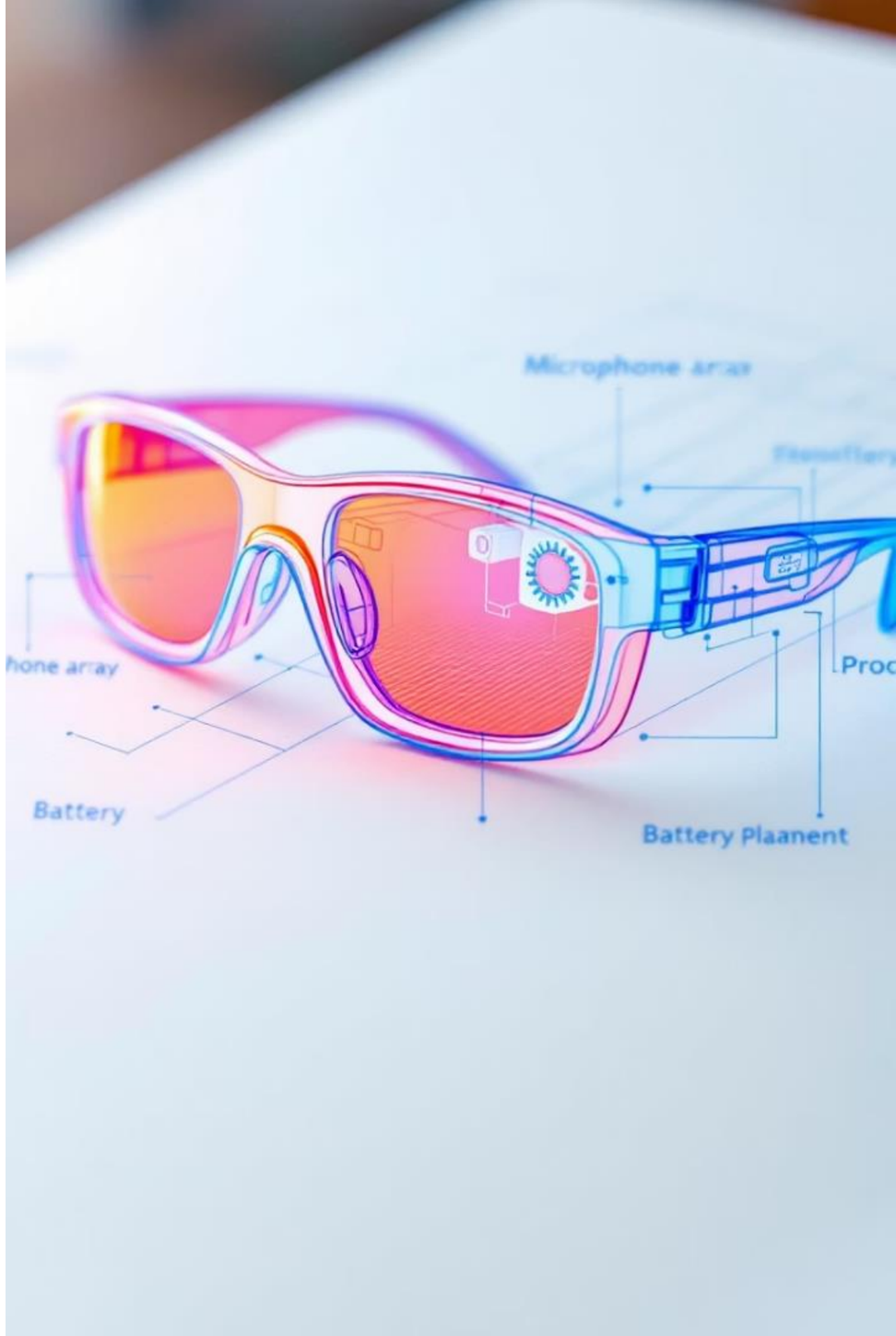
Noise suppression, feedback cancellation, and speech enhancement with <10ms latency.

## AI Enhancement

Edge AI analyzes acoustic scenes for contextual audio optimization and enhancement.

## Power Management

Sophisticated power systems deliver 12-18 hour battery life.

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# Additional Research Challenges

## Foreign accent conversion

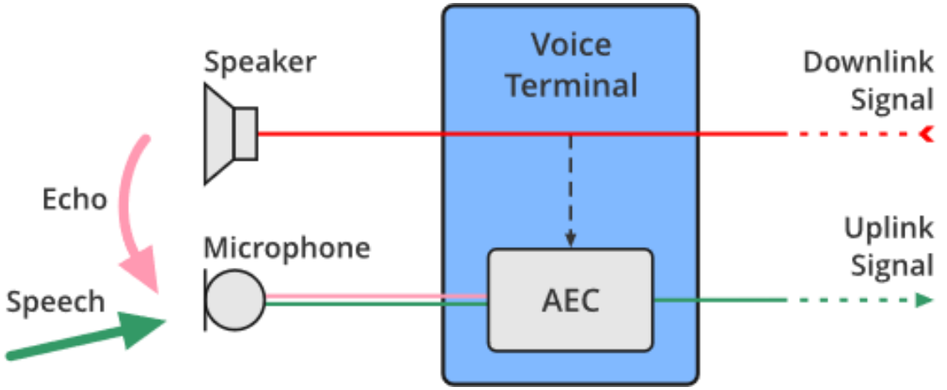
Converting the accented speech of a non-native speaker to a native-sounding speech with the same speaker identity

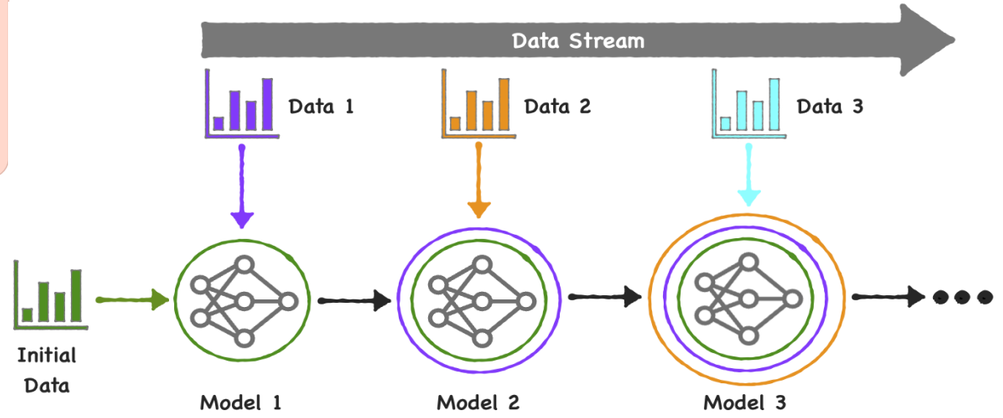
## Nonlinear Acoustic Echo

The proximity of speakers to microphones creates howling sounds. Advanced feedback suppression is essential.

## Incremental Deep Learning

Learning and enhancing knowledge progressively, without forgetting previously acquired information. Acquiring new information over time, while maintaining and building upon previous knowledge.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