Virtual Speech Reading Support for Hard of Hearing in a Domestic Multi-Media Setting

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SynFace Development

- Realtime speech driven facial animation system.
- Virtual speech reading support for the hard of hearing.

Speech Reception Threshold (SRT): SNR value at which the subject understands 50% of the input words.

Effort Scaling: How difficult it is to understand the speech in the input signal. [1, 6]

User Studies

Summary of SRT tests

- The delta SRT value (with SynFace without SynFace) per subject with babble noise. Top: the Swedish moderate hearing impaired group. Bottom: the Dutch cochlear implants group.

SynFace, Sentence test

• The Hearing at Home (HaH) project focuses on the needs of hearing-impaired people in home environments.
• The project is researching and developing an innovative media-center solution for hearing support.
• Includes SynFace speech reading support

Conclusions

- Benefit for some subjects in the use of SynFace in all tests with no significant increase for all subjects in all languages.
- Significant benefit of SynFace in babble noise in SRT test and effort scaling test.
- The increase in the length of SRT measurement seems to result in an inaccurate estimation of SRT for some subjects.

Language Mapping

- Using linear regression to map a language model to another language using very small amount of data ~30 min of speech

Noisy Conditions

- Evidence for possibility to adapt the models to noise speech using small amount of noisy speech data.

Analysis and Results

For normal hearing subjects: significant decrease in SRT (benefit) for SynFace over the audio only condition

http://www.hearing-at-home.eu/

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