

Improving Deaf-hearing communication through a multi-lingual avatar

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The American Sign Language
Avatar Project

DePaul University

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Institute for Language and Speech Processing

Athena Research & Innovation Information
Technologies

A little about the DePaul group



- Better Deaf/hearing communication through non-invasive technology
- Multidisciplinary
 - Computer Science
 - Animation
 - Mathematics
 - Data Science
 - Sign Language Linguistics
- Deaf, hearing



<http://asl.cs.depaul.edu>



ILSP in Athens

- Institute for Language and Speech Processing
- Active in Language Technology and Cultural Technology
- Interdisciplinary research
 - Linguistics
 - Information technologies
- Deaf, hearing
- Multimodal HCI / HRI



<http://www.ilsp.gr/en>







Deafness is a barrier of
language as well as sound.



An invisible, underserved population

- **Inadequate access to health care**

Kuenburg, A., Fellingner, P. & Fellingner, J. (2016). Health Care Access Among Deaf People, *Journal of Deaf Studies and Deaf Education*, 1-10.

- **High school graduates underprepared in math, science and reading**

Nagle, K., Newman, L. A., Shaver, D. M., & Marschark, M. (2016). College and Career Readiness: Course Taking Of Deaf and Hard of Hearing Secondary School Students. *American annals of the deaf*, 160(5), 467-482.

- **Underemployment**

Perkins-Dock, R. E., Battle, T. R., Edgerton, J. M., & McNeill, J. N. (2015). A Survey of Barriers to Employment for Individuals Who Are Deaf. *Journal of the American Deafness & Rehabilitation Association (JADARA)*, 49(2).



Why?

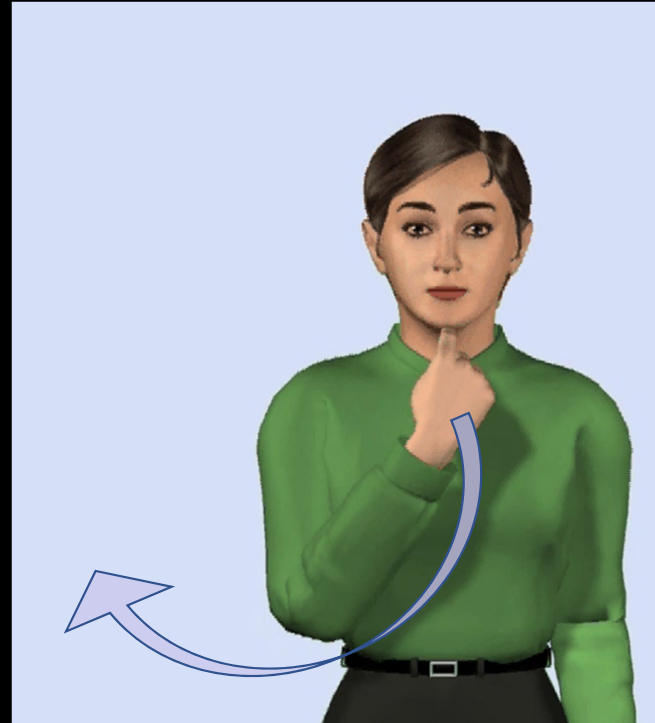
Sign languages

- Natural languages in their own right
- Not simply gesture
- Not fingerspelling
- Grammars are radically different from spoken languages.

Indicating pronouns



I tell you.



I tell him.

Nonmanual signals

**Small size
indicator**



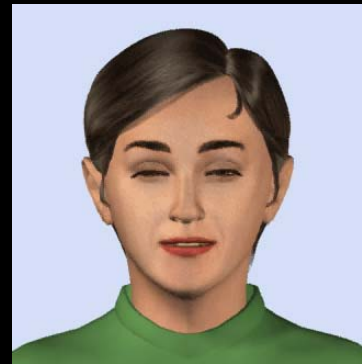
**Large size
indicator**



**Pronoun
reference**



**Sentence
punctuation**





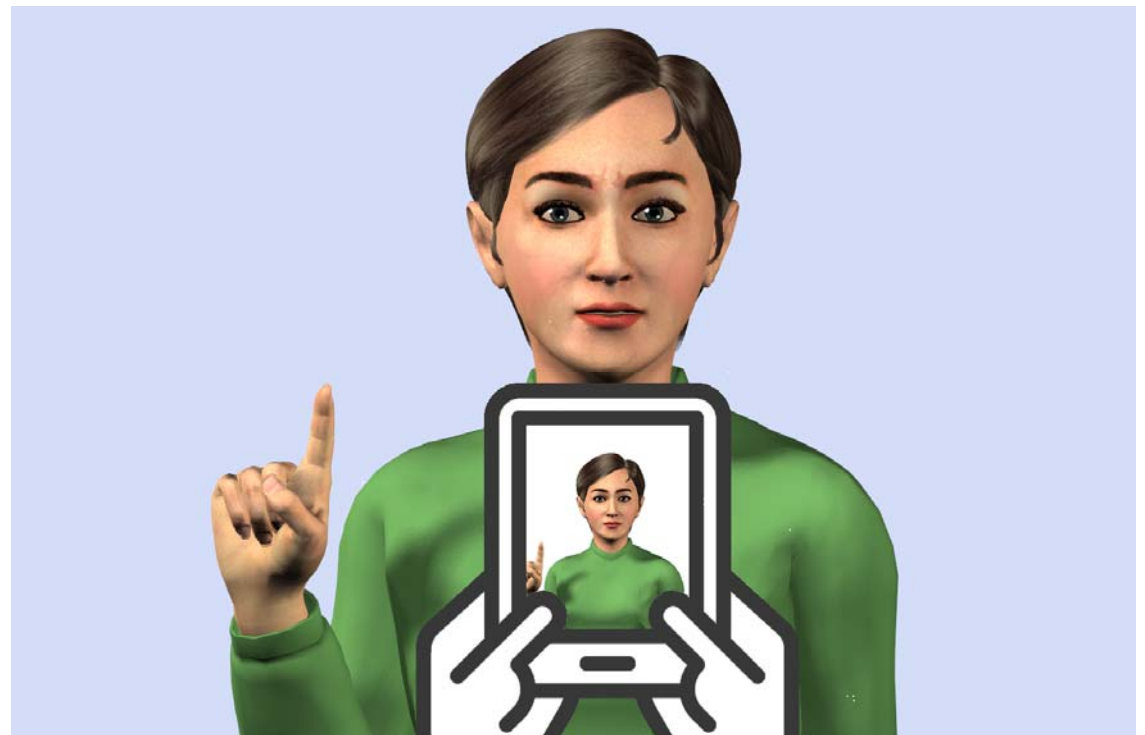
To reiterate ...

- American Sign Language (ASL) is different from English.
- Greek Sign Language (GSL) is different from Greek.
- German Sign Language (DGS) is different from German.
- ...

Goal: more User participation



- Determine use cases.
- Evaluate technology alternatives.
- Participate in
 - grant applications
 - design



Quite a challenge!



- **Where should it be used?**
- **How should it be used?**
- **Who should decide?**

Thank you

- We are always looking for new collaborations! Please email us at

asl@cs.depaul.edu

- Supported by:
 - The Council for International Exchange of Scholars (CIES)
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