Sign Language Data Science Applications

Dimitris Metaxas

Board of Governors Professor

Director CBIM and NSF IUCRC CARTA

Computer Science

dnm@cs.rutgers.edu

AI Methods for Sign Language Recognition

- ASL is a Spatio-Temporal language
- Pioneered since 1994 the analysis using previous generation AI/ML methods and 3D computer vision methods
- Very complex spatio-temporal problem due to difficulties from signing variations, input from multiple parts of the body and varying temporal scales
- Disagreement on glosses among linguists
- Need for linguistic constraints for robust recognition
- Started from isolated sign recognition and moving towards continuous signing recognition
  - Need to know boundaries of signs for use by linguistics
  - Robust and Scalable Solution
- Similarities with problems in other domains medical & biological (cardiac analytics, cells), autonomous driving, complex dynamic decision making
- I graduated the first Deaf PhD in CS who is know Full Prof. at Gallaudet
- Impact: Understand the language and provide tools for improved integration of Deaf People in our society, including their education and research capabilities

- We are producing generative methods to anonymize signers
- Produced a web-based app for people to upload a sign and then get their respective gloss

Face Anonymization