Our project (I)

- *Train*slate* (‘train’+‘translate’) ... or *train’s* *late* ;-) 
- System that automatically translates German train announcements of the Swiss Federal Railways into Swiss German Sign Language (*Deutschschweizerische Gebärdensprache*, DSGS)
- Project team: one hearing and two Deaf researchers

Our project (II)

- Sample input: ‘The RegioExpress to Olten, scheduled to leave at 6:41, has been cancelled due to a technical problem with the locomotive.’
- Output: avatar that signs the train announcements in real time on a mobile phone → JASigning (Elliott et al., 2001, 2008, 2010; Glauert and Elliott, 2011; Jennings et al., 2010; Kennaway et al., 2007)

Overview

- Introduction
- Study setting
- Results
- Conclusion
Comparison of our approach with Segouat (2010)

- Approach of Segouat (2010): most suitable for standardized data
- Our approach: no templates or pre-built avatar animations during the actual translation step
- Our research interest: sign language machine translation → goal: build a translation system that may later be extended to other domains with more lexical and syntactic variation
- Output of our system: good quality expected → not representative of overall performance of sign language machine translation

JASigning

- Input: signs notated in the Hamburg Notation System for Sign Languages (HamNoSys) (Prillwitz et al., 1989)
- HamNoSys XML representation: Signing Gesture Markup Language (SiGML) (Elliott et al., 2000)
- SiGML code may also contain information about non-manual features

Figure: SiGML code for the sign LAUTSPRECHER ('LOUDSPEAKER') in DSGS

Overview

1. Introduction
2. Study setting
3. Results
4. Conclusion

Related work: Segouat (2010)

- System that converts French train announcements into French Sign Language (Langue des Signes Française, LSF) avatar animations and displays them on a monitor in a train station
- Parallel data consisting of written French announcements and LSF avatar animations, both as templates with slots
- Slots: e.g., names of train stations, types of trains, reasons for delays
Study setting

- Sign-language-only setting
- Moderator: Deaf project member
- 7 participants (native signers of the language they evaluated)
- 9 announcements projected onto a screen → use of fingerspelling, rhetorical questions, indexical signs, lists of signs, ...
Study results and improvements (III)

- Speed of mouthings

Example: MÜNCHENBUCHSEE (place name)

Study results and improvements (I)

- Color of avatar's clothing and background

Study results and improvements (IV)

- Speed of fingerspelling

Example: ARTH-GOLDAU (place name)

Study results and improvements (II)

- End position of signed announcements

Final posture →
Study results and improvements (VII)

- Format of time specifications (II)

Example: 13:00 (1 p.m.)

Example: ORT ('place') ARTH-GOLDAU BELLINZONA LUGANO (place names)

Study results and improvements (V)

- Lists of place name signs

Example: UHR 13 PUNKT 00 ('CLOCK 13 DOT 00')

Study results: Remaining issues

- Default direction of eyegaze

→ ?

- Some non-manuals precede the manual components of a sign

Example: IX_oben_rechts ('IX_upper_right')

- Synchronization of manual and non-manual components of a sign

Example: 13 UHR 00 (‘13 CLOCK 00’)
Conclusion

▶ Evaluation of an avatar for Swiss German Sign Language (DSGS) among members of the Deaf community who use this language
▶ Evaluation data from a focus group with 7 Deaf signers
▶ Aspects improved:
  ▶ Color of the avatar's clothing and the background
  ▶ End position of signed announcements
  ▶ Speed of mouthings and fingerspelling
  ▶ Handling of lists of signs
  ▶ Format of time specifications
  ▶ ...  
▶ Remaining issues:
  ▶ Default direction of eyegaze
  ▶ Some non-manuals precede the manual components of a sign
  ▶ Synchronization of manual and non-manual components

Thank you for your attention!

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References


