

Extending the eSIGN Editor to Specify More Dynamic Signing

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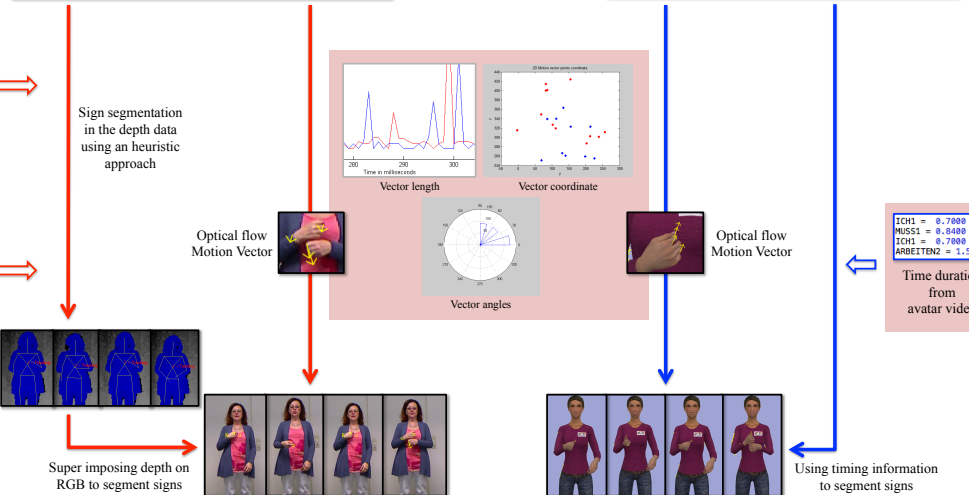
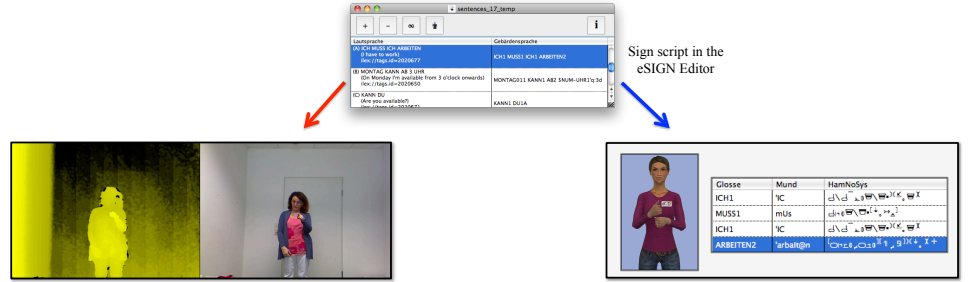
- Aim:**
- To replace the manual editing of dynamics related to avatar-animated signs
 - To time align the dynamics of human signing with the scripted sign (avatar)

- Approach:**
- Replacing the manual editing process with a Kinect-based approach
 - Extracting the dynamics of the user's sign performance and apply it to a pre-existing sign script featuring the exact same signs

Average time duration information for signs act as key frames for sign segmentation

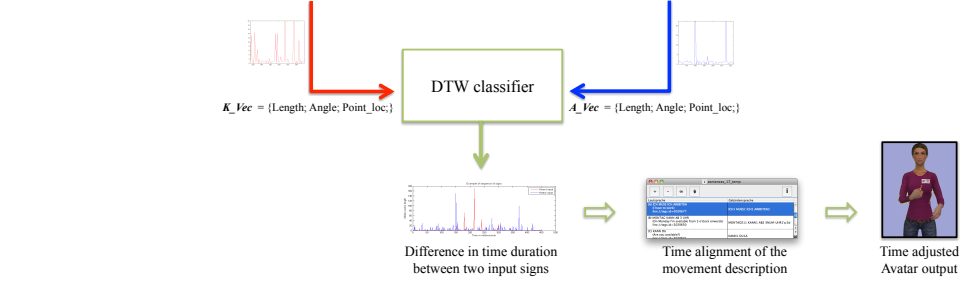
Construction of partial ground truth for body part's position.

Sign	Body part	Contact	Location
ICH	Bodyarm/Hand	Touch	Chest
MUSS	Bodyarm/Hand	Close	Side
ICH	Bodyarm/Hand	Touch	Chest
ARBEITEN	Hand conclusion	Touch	Chest



Test case

Leibensprache	Gebärdensprache
(A) ICH MUSS ICH ARBEITEN I must work Tag: 01-2020077	ICH MUSS ICH ARBEITEN
(B) MONTAGS KANNI ADE SINDU UHREIN 36 On Monday I'm outside from 3 o'clock onwards Tag: 01-2020050	MONTAGS KANNI ADE SINDU UHREIN 36
(C) KANN DU Are you available? Tag: 01-2020071	KANNI DUSTA
(D) ICH TREFFEN I meet you Tag: 01-2020085	ICH TREFFEN
(E) MITTWOCH LEBE Wednesday is my day Tag: 01-2020059	MITTWOCH LEBE
(F) ICH WAREN FREIHEIT FREIHEIT DU WAREN Only as free as you are Tag: 01-2020050	DUS WAREN ICH O.S. DURCHSTREICHEN I-SSAM WAREN I-SSAM
(G) ICH WAREN FREIHEIT FREIHEIT FREIHEIT FREIHEIT Strong and independent as an independent man in the house Tag: 01-2020050	QUELLE I-SSAM WAREN I-SSAM WAREN I-SSAM WAREN I-SSAM
(H) ICH WAREN FREIHEIT FREIHEIT FREIHEIT FREIHEIT Tag: 01-2020050	ICH WAREN FREIHEIT FREIHEIT FREIHEIT FREIHEIT



Experiments

(SeqA) ICH MUSS ICH ARBEITEN (Engl. "I MUST I WORK") and the corresponding vector length

(SeqA) Successful sequence with good match. Distance threshold > 98

Possible warping paths to match a sign "ARBEITEN" (Engl. "WORK")

Plot showing warped-avatar and signers time duration for 8 different sequences of signs, to visualize how close the warped-avatar time is to the human signers. Interestingly for some of the sequences, the warped-avatar time matches very close with the signers. This shows that our approach is able to get the time dynamics of human signers.

(SeqC) Failed sequence where there is no good match. Distance threshold < 32

Comparison of time difference between avatar and human signers for each sequence of signs

Matching accuracy of signers against avatar for different sequences given in %