

## Goal:

- Placing depth sensor devices into the existing DGS corpus studio setup
- Utilizing the depth sensor data for non-manuals annotation

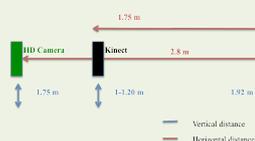
## Why:

- Automatic and semi-automatic annotation of non-manuals would mean dramatic savings on annotation time!

### 1: Sensor Positioning



Final studio setup with sensors



Carmine 1.09



Kinect XBOX 360

- Adapted from the DGS corpus recording setup (Hanke et al., 2010).
- Signer is standing instead of sitting
- Signer is approx. 3 meters away from the frontal HD camera

### 2: Video Processing

#### Facial Feature Tracking

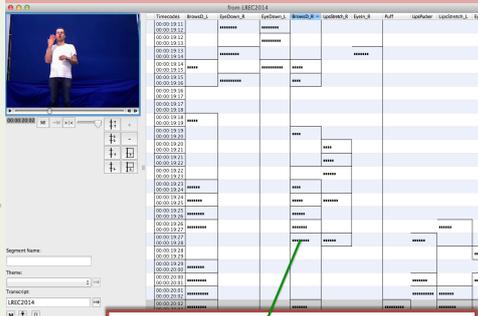


#### Body Tracking



- Facial expressions are recognised at each frame of the movie.
- Assign weights for each expression (ranging from 0 to 100).

### 3: Non-manuals annotation-iLex



- Represent weights as "simple dotted bars" in the non-manual annotation section.
- Occurrences and weights for each expressions at every frame are mapped.

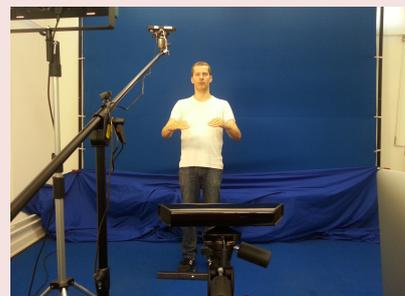
## Challenges in sensor positioning

### Constraints:

- Carmine must be at shorter distance (0.65-0.70 m)
- Kinect tracks better until 1.80m

### Challenges:

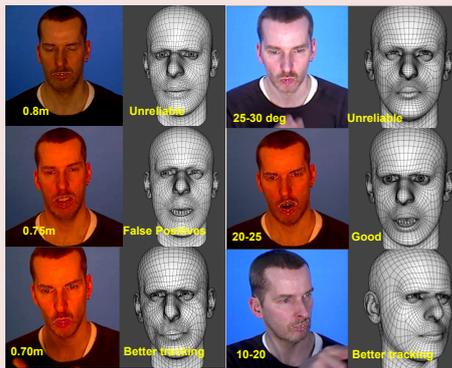
- The signer's eye gaze should not be distracted
- These sensors can appear in other camera's fields of view.



Visibility of Carmine in the frontal HD camera stream



### Dependency among Recognition quality, Carmine Distance (left) and Carmine rotation (right)

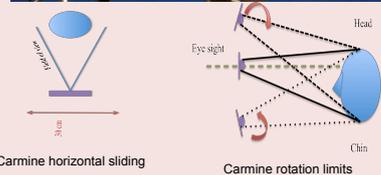


- Recognition highly relies on good training data of each individual signer.
- Optimal orientation of the Carmine independent of different signers' physiognomies.

### Observations

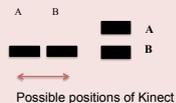
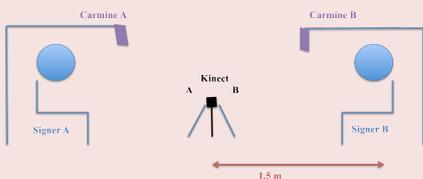
- Good lighting results in better accuracy
- Forehead and chin area should be in the field of view of Carmine.

### Dependency between tracking quality and Kinect height at a fixed distance of 1.75m away from the signer



- One degree of freedom for positioning the Kinect devices is lost.
- The only reasonable position is directly above the screens!

### Sitting Configuration



### Non-manuals annotation in iLex

iLex Transcription details

Timestamp	Segment	Start	End	Weight	Label
00:00:18:00					
00:00:18:01					
00:00:18:02					
00:00:18:03					
00:00:18:04					
00:00:18:05					
00:00:18:06					
00:00:18:07					
00:00:18:08					
00:00:18:09					
00:00:18:10					
00:00:18:11					
00:00:18:12					
00:00:18:13					
00:00:18:14					
00:00:18:15					
00:00:18:16					
00:00:18:17					
00:00:18:18					
00:00:18:19					
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00:00:18:21					
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00:00:18:24					
00:00:18:25					
00:00:18:26					
00:00:18:27					
00:00:18:28					
00:00:18:29					
00:00:18:30					

FaceShift Recognizer

! Lip movements recognition are inconsistent due to occlusion.