INTERPRETING HAND-OVER-FACE GESTURES

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People often hold their hands near their faces as a gesture in natural conversation, which can interfere with affective inference from facial expressions. However, these gestures are valuable as an additional channel for multi-modal inference. We have collected a 3D multi-modal corpus of naturally evoked complex mental states, and labelled it using crowd-sourcing. The database will be made generally available.

CAM3D Corpus

We elicited and recorded complex mental states involving both human-computer and human-human interaction.


Elicitation Methodology
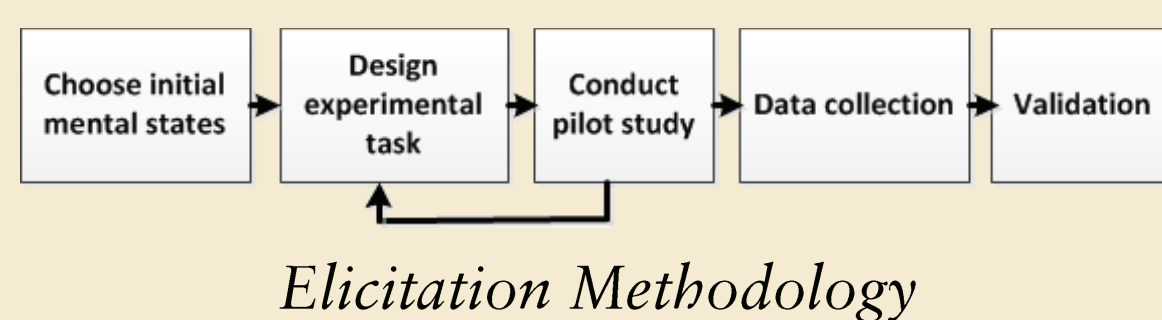
We used three different sensors for data collection: Microsoft Kinect sensors, HD cameras and microphones.

Data collection setup (HCI & dyadic)

The corpus consists of 108 labelled videos of 12 mental states including spontaneous facial expressions and hand gestures. It was labelled using crowd-sourcing (inter-rater reliability *Kappa* = 0.45).

Colour image   *Disparity map*
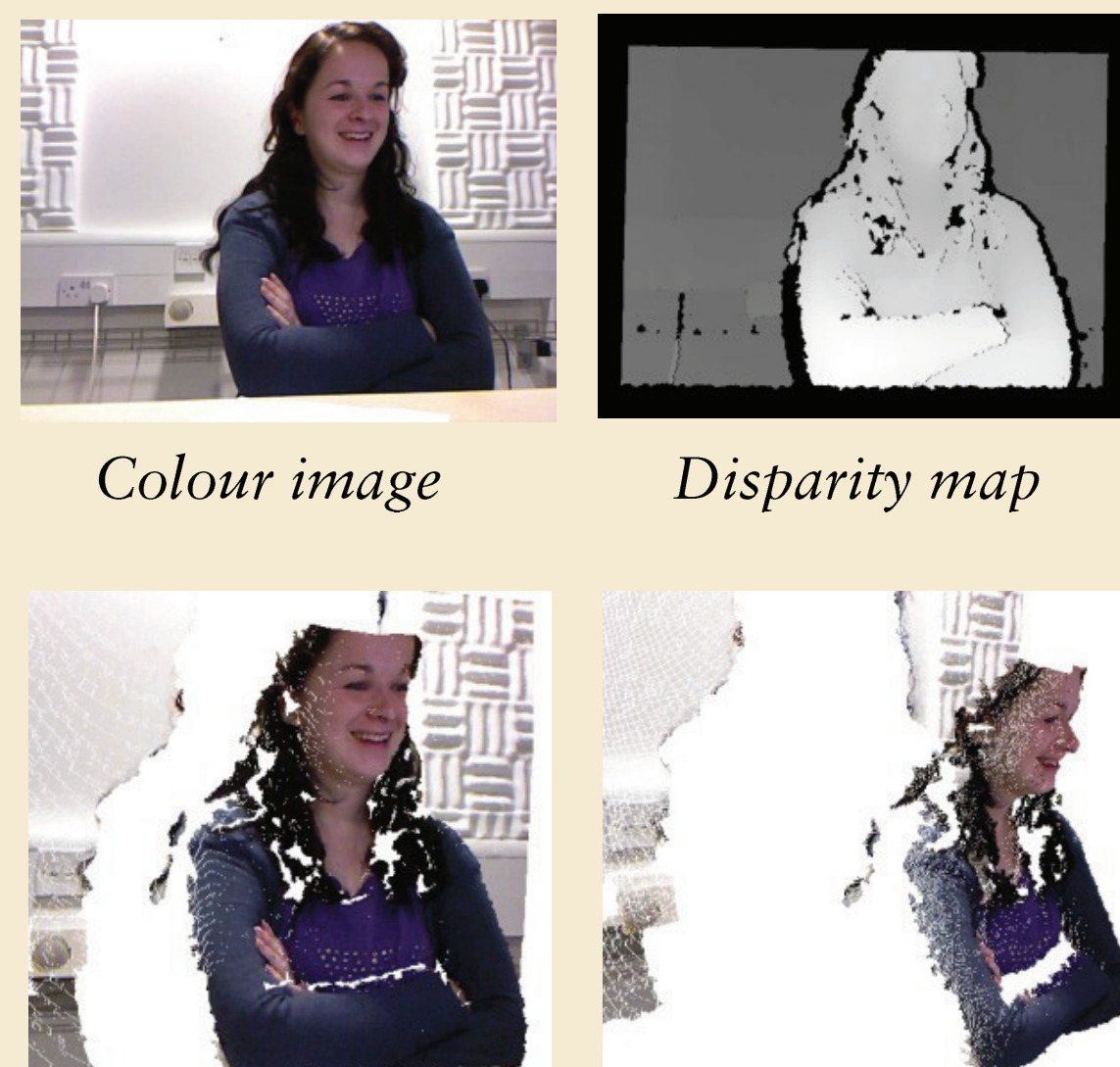
Point cloud visualisation combining colour image and disparity map.

Hand-over-face

By studying the videos in our corpus, we noticed:

Spontaneous hand-over-face gestures occur in 16% of HCI and 25% in dyadic interactions.

Gestures serve as affective cues in cognitive mental states.

Currently, we are exploring the use of depth data in automatic analysis of facial expressions and hand gestures. We will also expand our corpus to allow further exploration of spontaneous gestures and hand-over-face cues.

Bored	Happy	Thinking
Thinking	Unsure	Thinking
Thinking	Thinking	Thinking

Different hand-over-face shape, action and face region occluded can imply different mental states
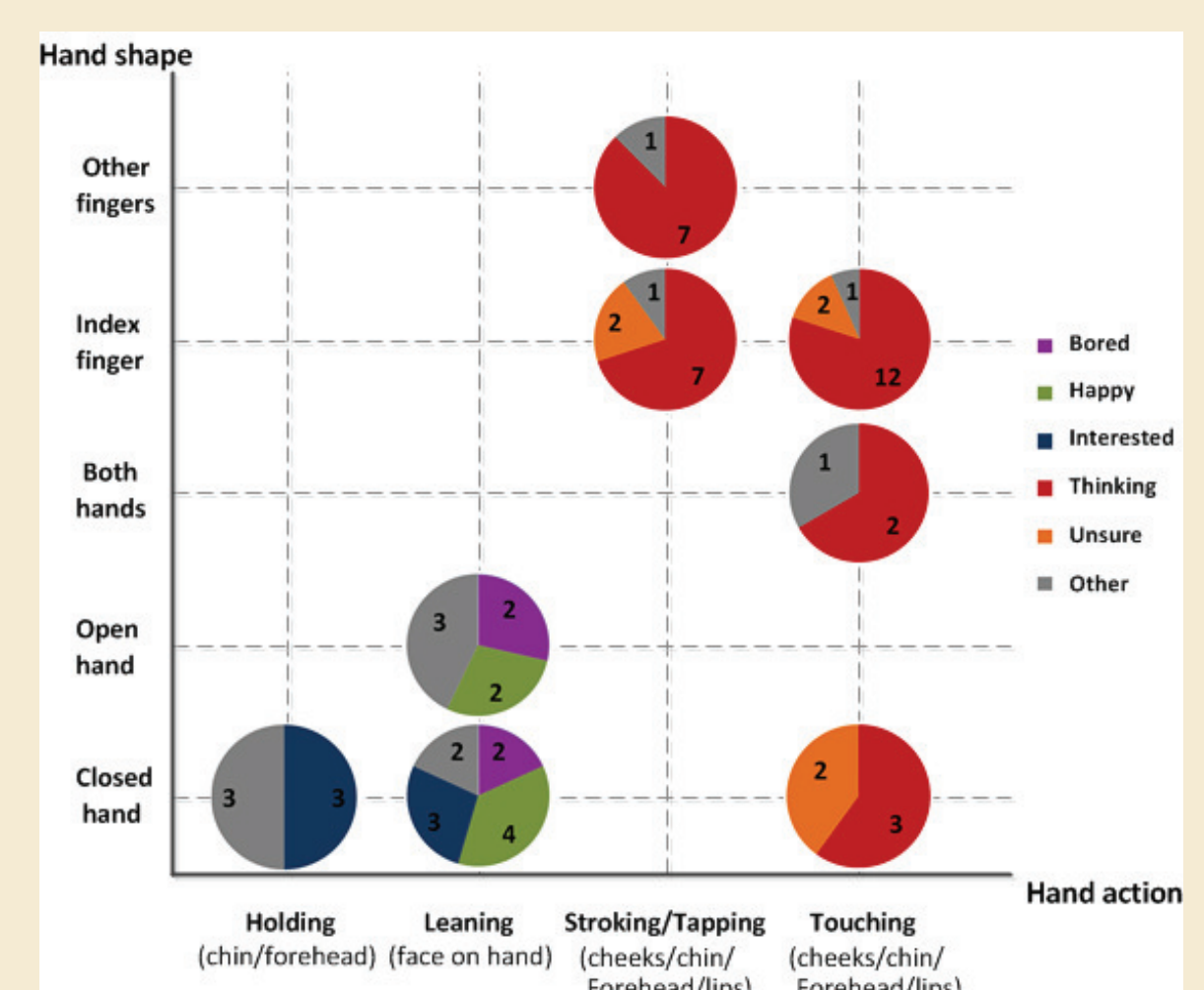
Encoding of hand-over-face shape and action distributed in different mental states. Note the significance of index finger actions in cognitive mental states

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