# Hand Gesture Interaction

Hands are our main tools to manipulate objects. Gesticulation can complement or even substitude language. If hands are so valuable to us, why not use them in a more direct manor for human-computer interaction then they already are?
Inspired by findings of Adam Kendon on gesticulation in every day use we identified suitable gestures which can be used for interaction with large high-resolution displays.

„palm pointing"   „precision grip"
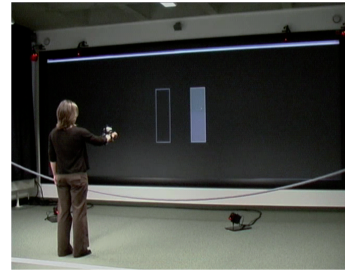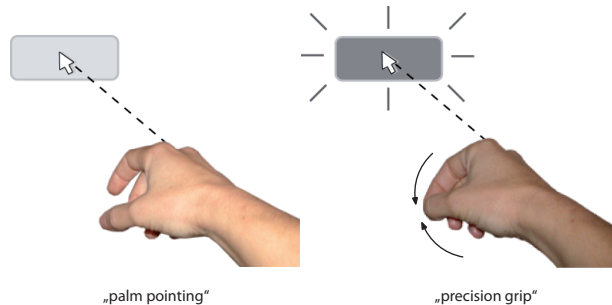
Experimental Set-up
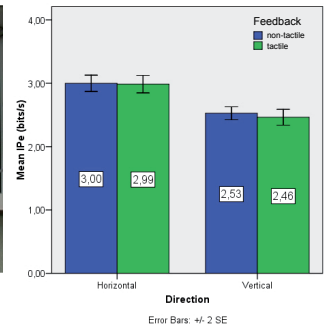
To access the acceptance, the performance and the influence of additional tactile feedback and the movement direction, we conducted a formal evaluation study. 20 participants where recruted and performed a one-directional tapping task, based on the ISO 9241-9. Results showed, that the proposed hand gesture interaction for pointing & selecting was very well received by the participants. Furthermore it was found, that tactile feedback led to a significant decrease of performance and that trials with horizontally aligned target were conducted with a significantly higher performance then trials with vertically aligned targets.

Key Aspects

Pointing & Selecting

Natural „palm" pointing gesture used for absolut positioning of the display cursor, combined with the „precision grip" gesture for selection.

Dragging

Moving objects fast across large distances using the „precision grip" gesture. Just grab, move and release.

Zooming & Panning

Using whole body movement to complement hand and finger gestures for zooming and panning interaction.

Multimodal Feedback

Additional auditive and tactile feedback to augment visual feedback.

Finger Classification

Calibration free algorithm, combining anatomical and heuristic knowledge of the human hand.

Gesture Classification

Fast and robust classification of hand postures using geometrical gesture models.

Input Device

Wireless custom build or commercial data glove in combination with an optical tracking system.

Publication

Foehrenbach, S., König, W.A., Gerken, J., Reiterer, H.: Natural Interaction with Hand Gestures and Tactile Feedback for large high-res Displays, MITH'08: Workshop on Multimodal Interaction Through Haptic Feedback, held in conjunction with AVI'08: International Working Conference on Advanced Visual Interfaces, Napoli, Italy, 2008.
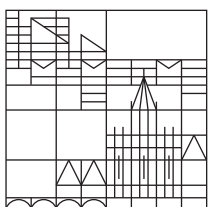
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