Interacting with Five Fingernail Displays using Hand-Postures

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Motivation

Fingernail Displays allow for ready-at-hand interaction and visual in-situ augmentation of objects right at our fingertips.

Their small form-factor restricts the input on the display. Especially touch input on the display is is not appropriate for them and does not use the rich input space of the human hand.

Augmentation of a phone receiver, while grasping the device.

Ready-at-hand notification of an event. Interactive controls allow for brief interaction.

Interaction Techniques

We analyze how five Fingernail Displays can be effectively used in various postures and propose a set of interactions that leverage hand postures.


Example Hand Postures: T-K. Kim, S-F. Wong and R. Cipolla, Tensor Canonical Correlation Analysis for Action Classification, In *Proc. of IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2007.*

Selection

Tapping possibilities
(a) With thumb
(b) Other hand
(c) On-object
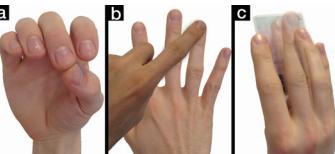
Overview and Details

The thumb displays an overview and shows notifications
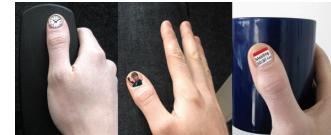
Rotation reveals details
(a) Account balance
(b) Last transactions

Orientation as input
(a) Horizontal: Tiled view
*(b) Vertical: List view*

Application Chooser

Spreading fingers reveals all running applications

## Prototype

Five color displays (0.96", 96x64px) with five three-axis accelerometers to detect the hand postures and tapping.
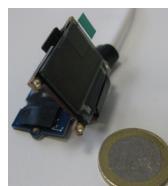
Accelerometer Data

Selection/Tap
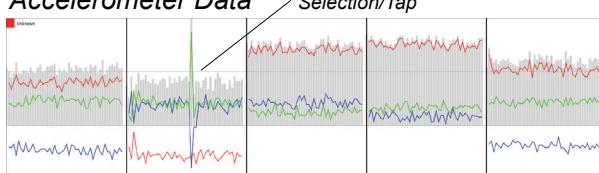
Ongoing and Future Work

Recognition of more finger gestures, including sliding for scrolling through content.

Controlled user study to evaluate the interactions techniques with the Fingernail Displays.

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