

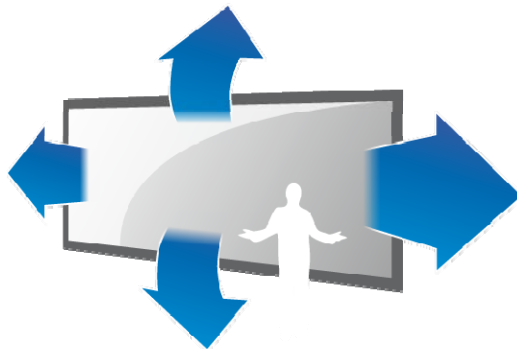
Finteraction

Finger Interaction Using Mobile Phones

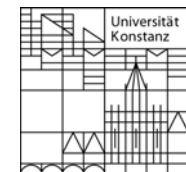
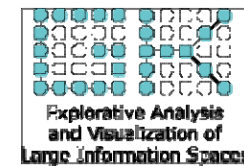
NordiCHI Workshop



Mahsa Jenabi



inteHRDis
Interaction Techniques
for High Resolution Displays





Outlook

Motivation

Novel Interaction Technique

Conclusion & Future Work



Why Mobile Phone?

- People carry it almost everywhere, almost all the time
- 100% adaptation to the user possible: one-time calibration, users' preferences
- Personal Information Management, first truly pervasive multimodal device: Speech, gesture and body language, touch & manual input
- An all-in-one technology-rich device
- Promising for an efficient, effective, usable interaction

Zur Anzeige wird der QuickTime™
Dekompressor „
benötigt.

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Context of Use 1: Controlling Slides during a Presentation

The user should have following possibilities using an interaction technique:

- Works even on the move (=mobile)
- No need to face the display for interaction, direction-independent (≠focus-turning)
- No need to look at the mobile phone while interacting (≠eye-engaged)

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Finteraction



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Context of Use 2: Tourist Information Wall at Airport

A user is searching for Lund and wants to know its population and languages the people speak there.

The Interaction method should let him keeping his eye contact with the screen of the mobile phone (≠screen-absence)

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Finteraction



Motivation



Novel Interaction Technique



Conclusion & Future Work

Finteraction

Finger Interaction using mobile phones for controlling large high resolution displays.

Interaction way: Moving the index finger in front of the mobile phone's camera.





Finteraction



Motivation



Novel Interaction Technique



Conclusion & Future Work

Zur Anzeige wird der QuickTime™
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Scrolling/ Panning



Dragging

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Pointing

Primitive Tasks¹

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Zooming



Clicking

1: Primitive tasks are extension of ISO 9241-400 (+ zooming and scrolling)



Interaction Type

- One-handed, eye-free, mobile interaction
- Indirect interaction
- Relative positioning with three degrees of freedom determining (x,y,z) dimensions





Finteraction Pros

- Mobile & one-handed
- No occlusion problem exists in e.g. Apple iPhone
- Solves focus-turning problem
- Solves eye-engaged problem
- Solves screen-absence problem

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Finteraction Challenges

- Distinguishing gestures:
Solution: HMM
- Out of the camera view
Solution: tactile feedback
- Proper gesture set
Solution: Wizard of Oz experiment





Conclusion & Future Work

Finteraction is an eye-free, mobile, flexible interaction concept using mobile phones as an input device for Large High Resolution Displays.

- Wizard of Oz test
- Implementing and testing a prototype using Nokia N96 using HMM
- Multimodal interaction with mobile phones: combining speech, gesture, touch, accelerometer

Thank You for your attention!