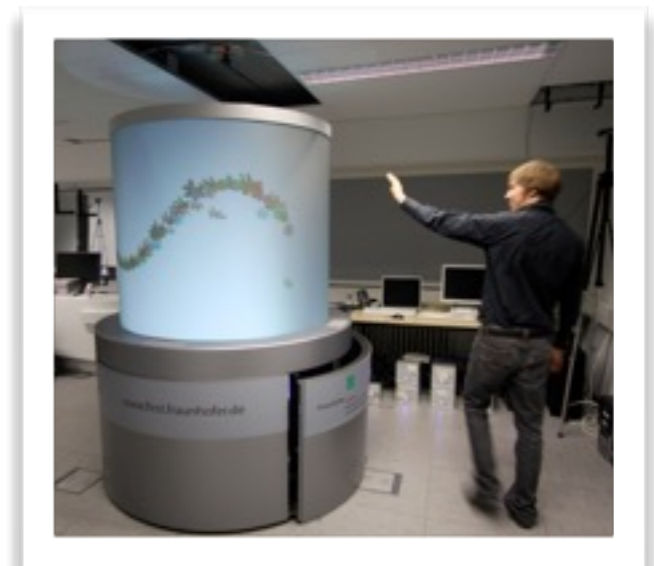
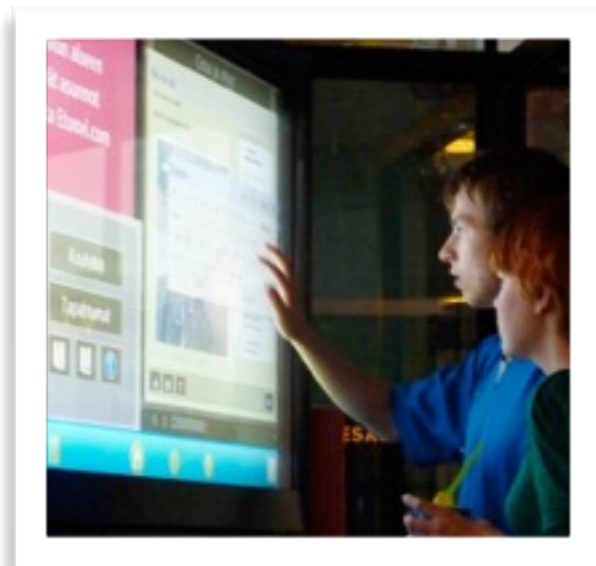


Introduction

Organization, Overview and Projects



Vorlesung „Advanced Topics in HCI”

Prof. Dr. Florian Alt, SS 2015

3. IT-Jobtag 2015
 Donnerstag, 16. April 2015, 14-20 Uhr
 Online-Jobbörsen setzen auf persönlichen Kontakt
 Jetzt über die Aussteller informieren

News Newsticker 7-Tage-News Archiv Foren

Kontakt [Twitter] [Facebook] [LinkedIn] [Email] [RSS]

Topthemen: Hannover Messe Galaxy S6 Apple Watch Windows 10 NSA iPhone 6 Android

heise online > News > 2015 > KW 16 > Navigation für Fußgänger: Elektrische Muskelstimulation als Richtungsgeber

14.04.2015 13:52

Vorige | Nächste

Navigation für Fußgänger: Elektrische Muskelstimulation als Richtungsgeber

Lesen / PDF-Download



Bislang müssen Fußgänger aufs Handydisplay schauen oder auf Sprachausgabe setzen, wenn sie mit ihrem Smartphone navigieren wollen. Deutsche Forscher entwickeln ein System, bei dem die Richtungshinweise als eine Art Fernsteuerung direkt in die Beine gehen.

Deutsche Forscher arbeiten an einer Navigationshilfe, bei der die Richtungshinweise direkt als elektrische Impulse in die Beinmuskulatur gegeben werden. Die Nutzer könnten sich so etwa von der Navi-App eines Smartphone dirigieren lassen, ohne ständig auf das Display schauen zu müssen, schreiben die Wissenschaftler in ihrem Paper.

Für die richtungweisenden Stromimpulse werden am Oberschenkel der Spaziergänger Elektroden angebracht. Die stimulieren dann den vom Becken bis zum Schienbein verlaufenden Schneidermuskel (Musculus sartorius), der Knie- und Hüftgelenk beugt sowie Oberschenkeldrehungen ermöglicht. Die Impulse erfolgen beim Gehen, wenn das jeweilige Bein in der Luft ist, und bewirken eine leichte

Anzeige

Smart Home
 Ihr Schlüssel zum smarten Helm
 + GUTSCHEIN: AlphaEOS: Intelligente Heizungssteuerung
 Als Zeitschrift oder eMagazin bestellen
 heise shop

Top-News

- Weiterleitung auf SMB-Freigabe petzt Passwort-Hash
- Stromsparender Funk: Entwicklungsumgebung für Geräte mit Bluetooth Smart
- Programmiersprachen: TIOBE-Index sieht Java wieder vom SoftMaker Office 2016 für Windows im öffentlichen Beta-Test
- Navigation für Fußgänger: Elektrische Muskelstimulation als Richtungsgeber

Top-Newsletter

Die wichtigsten Meldungen 2 X wöchentlich.

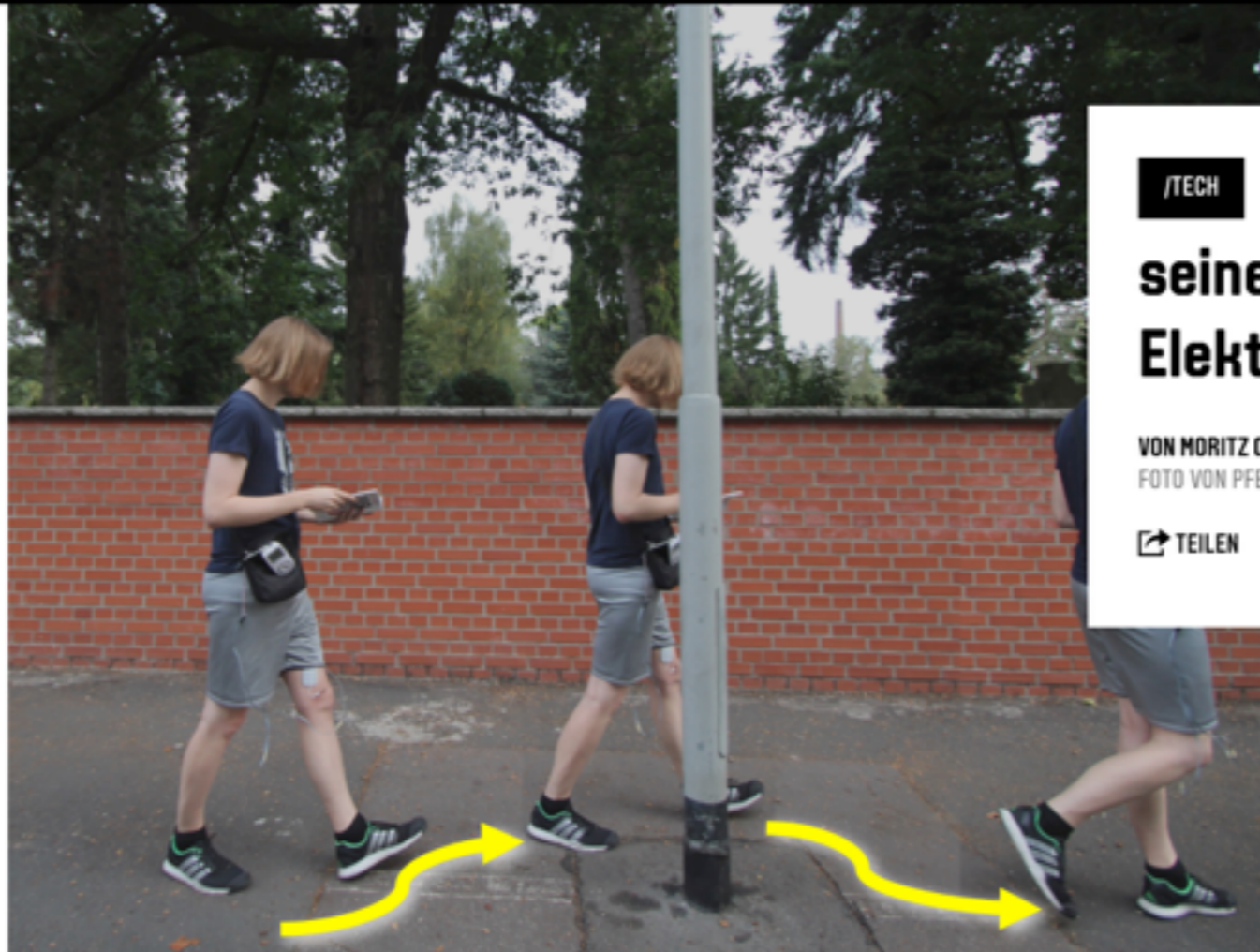
E-Mail-Adresse [Anmelden]

Datenschutz

Ihre Kamera kann mehr!

Der heise Foto-Club hilft dabei.

Ab **2,08 €** im Monat
 heise Foto-Club



/TECH Dieser Doktorand steuert seine Studenten mit Elektroschocks am Bein

VON MORITZ CEIER
FOTO VON PFEIFFER

[TEILEN](#)

Ein bizarr anmutendes Experiment: Durch einen Park in Hannover streifen Menschen, deren Beine nicht ihnen selbst gehorchen — ein Wissenschaftler steuert ihren Gang mit dem Handy. Sein Navigationssystem bewegt die Muskeln der Probanden durch elektrische Impulse. Doch dem Forscher schwebt noch mehr vor: die Steuerung großer Menschenmassen bei einer Evakuation zum Beispiel.

Some Infos About Me



LMU MÜNCHEN (2001-2007)

Media Informatics / Communication Science



Pinnacle Systems Inc. (Mountain View, US) (2005)

Internship | Web development



Fraunhofer IAIS (Bonn) (2007)

Diploma Thesis: An Annotation Platform for the World Wide Web



SCHREINER MEDIPHARM LP (New York, US) (2007-2008)

IT Specialist



UNIVERSITY OF DUISBURG-ESSEN (2008-2011, 2012)

Ph.D. studies in Computer Science | PD-Net | Guest Lecturer (Pervasive Computing)



Deutsche Telekom Labs, TU Berlin (2011)

Visiting Researcher | Project: Looking Glass



UNIVERSITY OF STUTTGART (since 2012)

Ph.D. in Computer Science (Dr. rer. nat.) | PD-Net | Post-Doc



Johann-Kepler University Linz (2013)

Guest Lecturer (Unconventional User Interfaces)



LMU München (since October 2013)

Assistant Professor in Media Informatics

Organisation

Objectives

- Introducing foundations and current trends in HCI
- Provide an overview of active research areas at the LFE Medieninformatik (bachelor/master theses, Ph.D.)
- Format:
 - Weekly lecture on varying topics
 - Subsequent group project (2-3 students)
 - appr. 2 weeks full time project work
 - scientific paper (4 pages ACM format)
 - scientific presentation (15 minutes + 5 minutes discussion)
 - slides in English
 - talk in English or German

Lecture

- Lecture

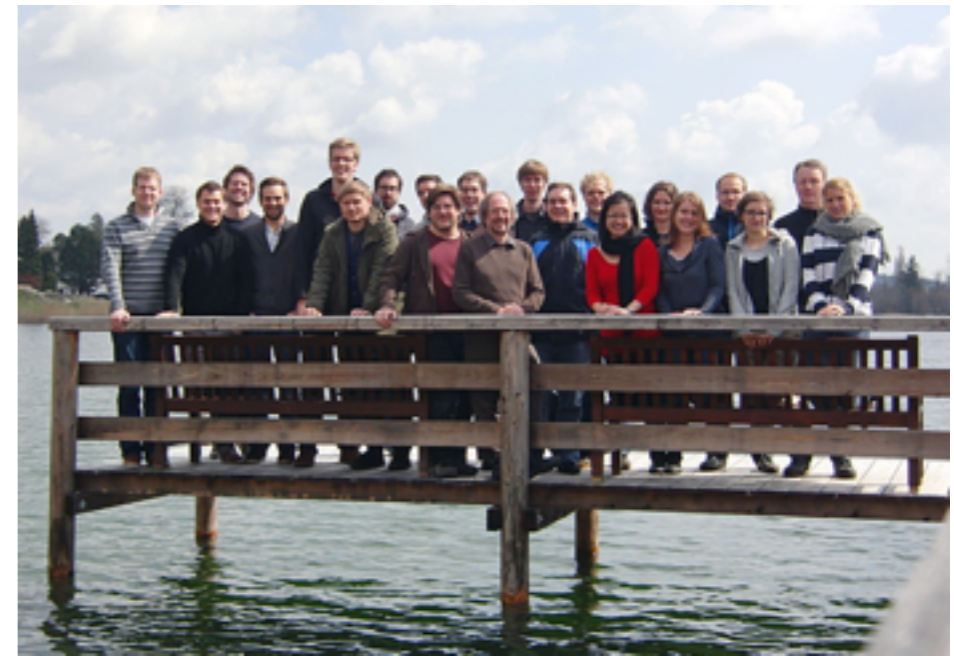
- Wednesday 16-18h
- Geschwister-Scholl-Platz 1, D Z005
- Lecturers: staff of LFE Medieninformatik

- Website

- <http://www.medien.ifi.lmu.de/lehre/ss15/ath/>
(Slides, Readings, additional material)

- Uniworx

- <https://uniworx.ifi.lmu.de/?action=uniworxCourseWelcome&id=404>



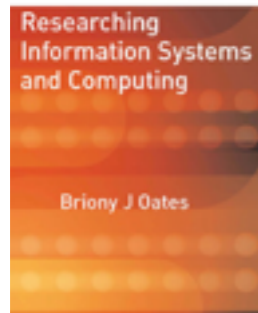
Projects

- Topics taken from current projects
- Research focussed
- Organization
 - Projects begin after the respective lecture, latest at end of term
 - Supervisor from scientific staff of LFE Medieninformatik
 - Regular meetings with supervisor
 - Seminar Day:
 - Suggestion: Wednesday, 02.09.2015
 - Alternative: Monday, 21.09.2015

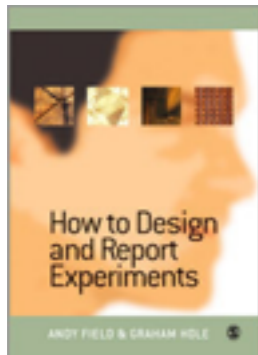
(Preliminary) Outline

15.04.2015	Florian Alt	Introduction
22.04.2015	no lecture	
29.04.2015	Florian Alt	Pervasive Displays - Understanding the Future of Digital Signage
06.05.2015	Simon Stusak	Data Physicalization - Exploring the Potential of Physical Visualizations
13.05.2015	Sarah Tausch	Group Mirrors
20.05.2015	Daniel Buschek	Certainly Uncertain but Probably Predictable: Modelling User Behaviour in Mobile HCI
27.05.2015	Mohamed Khamis	Usable Gaze-based Interaction
03.06.2015	Henri Palleis	Interactive Tabletops and Surfaces
10.06.2015	Axel Hösl	Through-the-Lens Controls
17.06.2015	Mariam Hassib	Brain Computer Interfaces & Physiological Sensing
24.06.2015	Tobias Stockinger	Usable Security and Privacy I - Establishing and Breaking Trust on the Web
01.07.2015	Emanuel von Zezschwitz	Usable Security and Privacy II - Authentication on Mobile Devices
08.07.2015	Hanna Schneider	mHealth - Addressing our Unconscious Self
15.07.2015	Maria Fysaraki	Computer-facilitated Collaboration and Argumentation - Combining Learning and HCI Research Topics
22.07.2015	Florian Alt	Automotive User Interfaces

Literature



Briony J. Oates
Researching Information Systems and Computing



A. Field & G. Hole
How to Design and Report Experiments

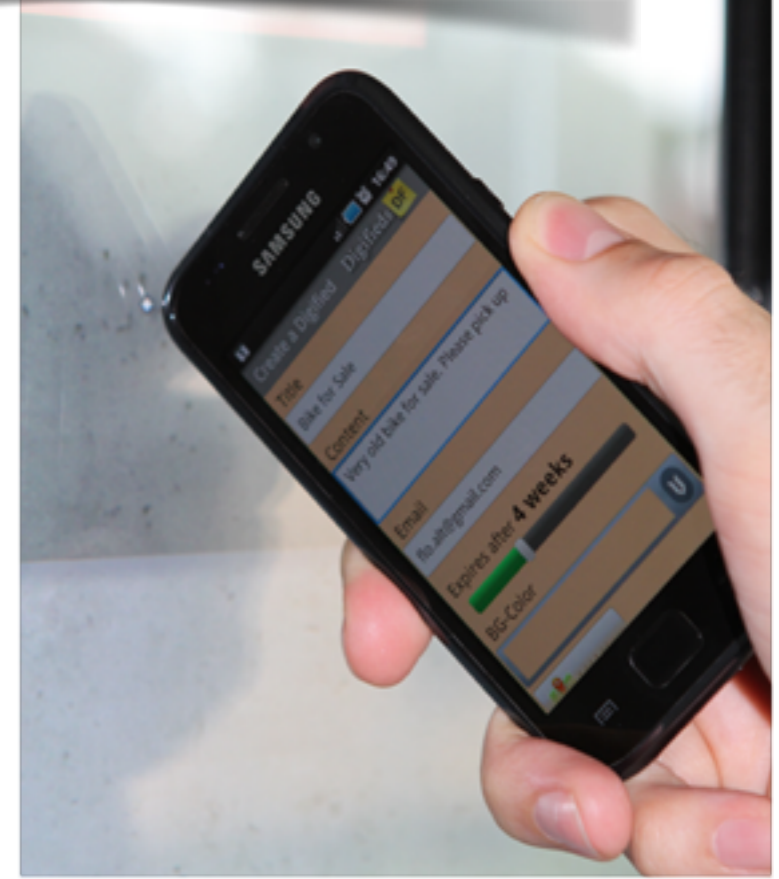
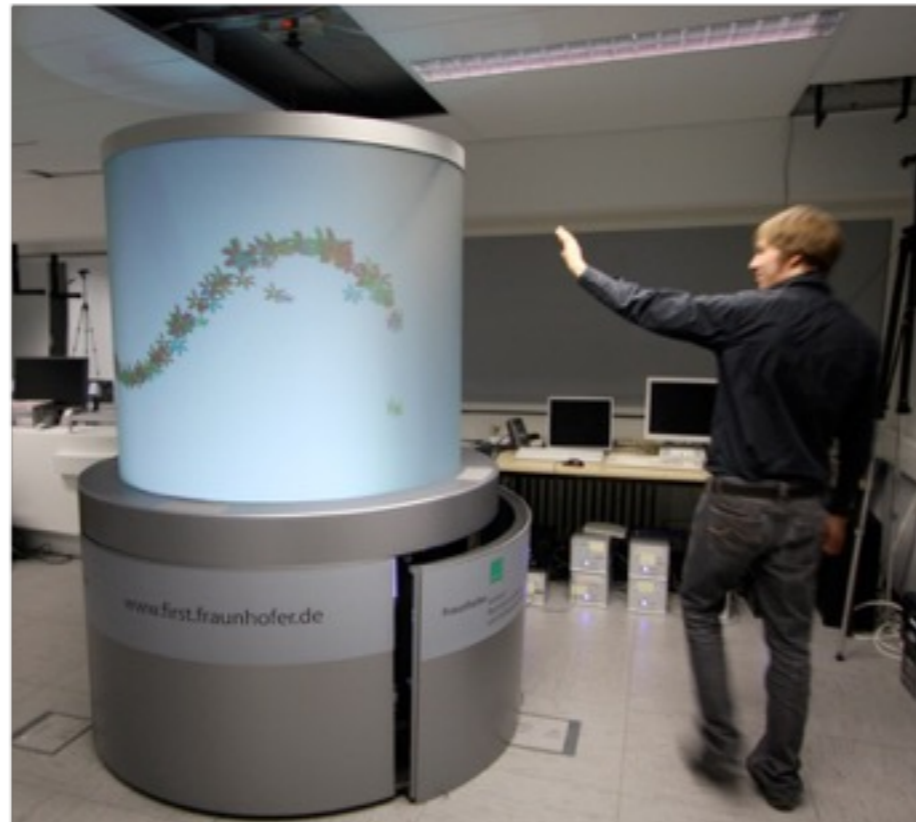
Slides and Papers from
Seminar Wissenschaftliches Arbeiten und Lehren

Topics and Projects

Pervasive Displays - Understanding the Future of Digital Signage

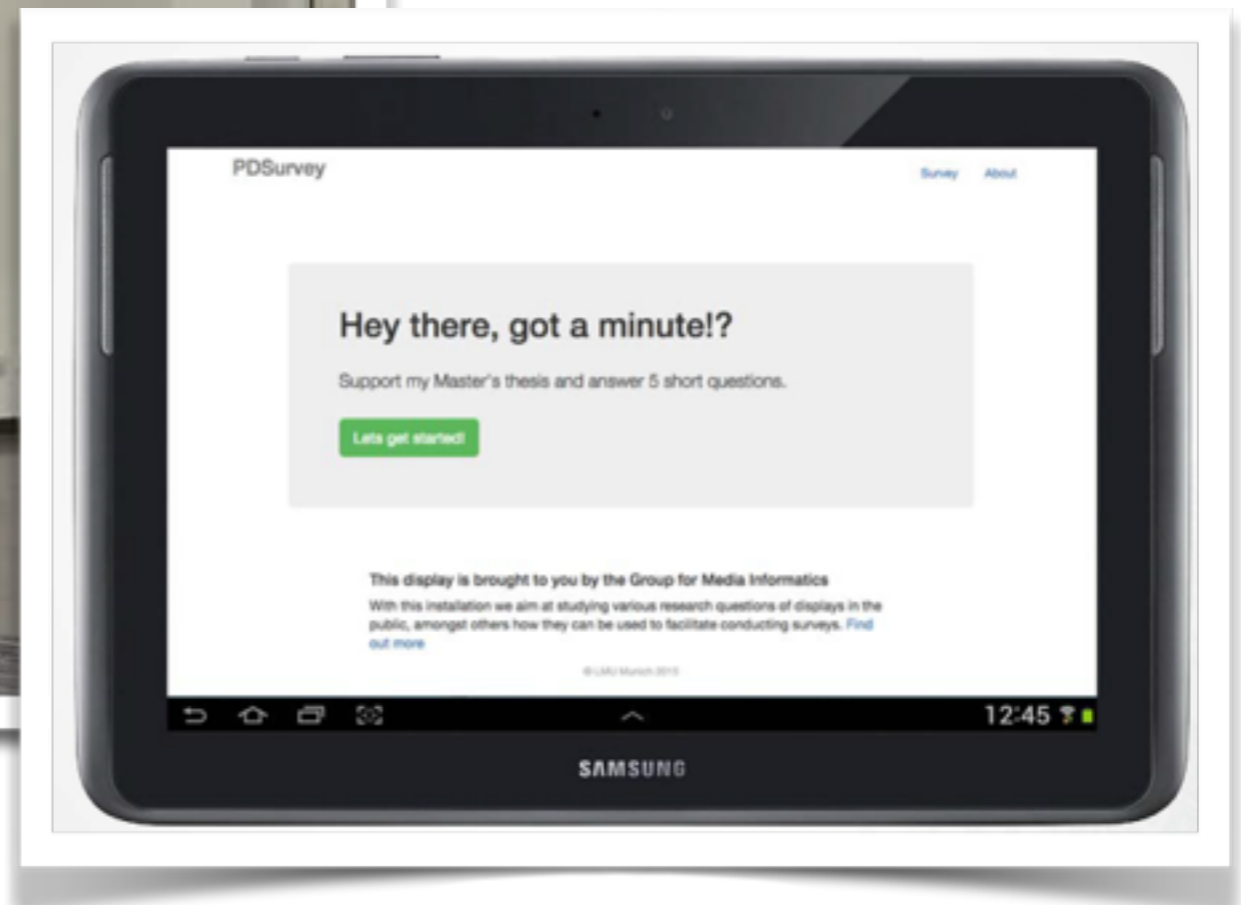
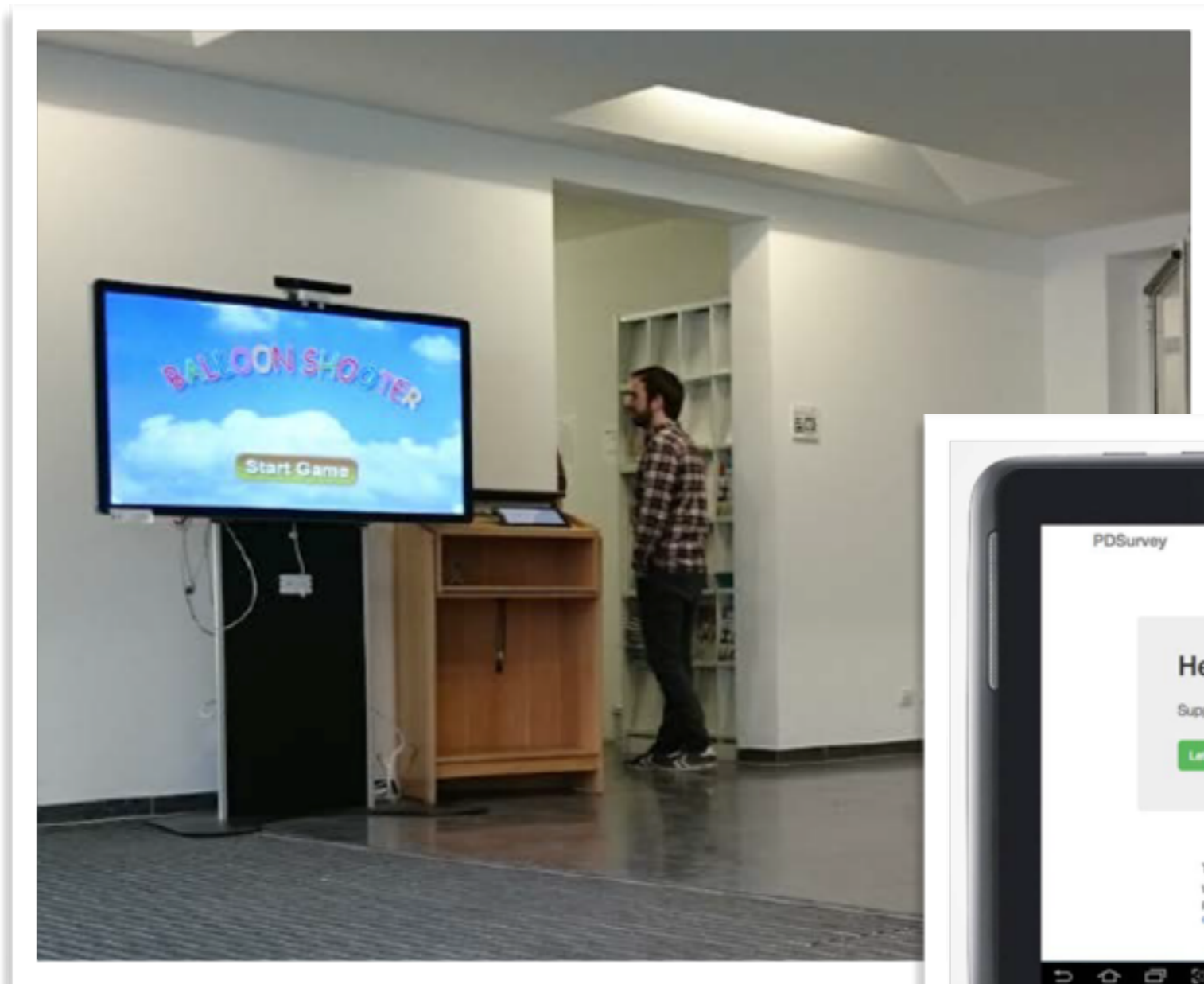
Pervasive Displays

Understanding the Future of Digital Signage



Project: PD Survey

How to motivate users to provide feedback?

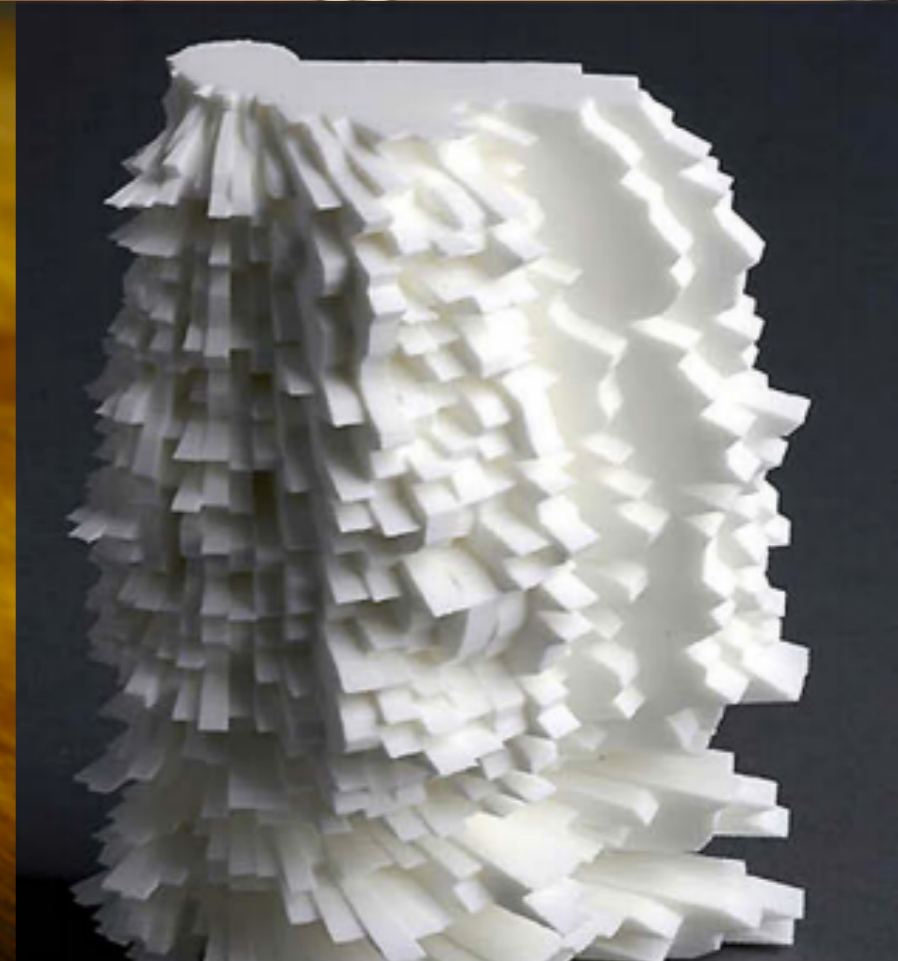


Data Physicalization - Exploring the Potential of Physical Visualizations

Collaborative Problem Solving with Physical Visualizations



Data Physicalization



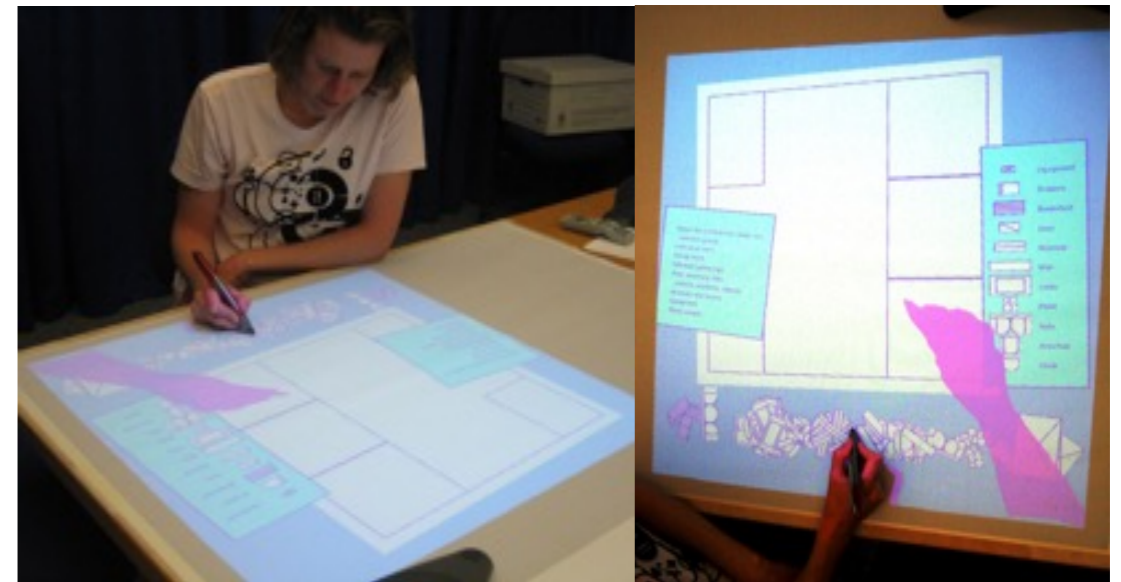
Group Mirrors

Computer Supported Cooperative Work

CSCL



Awareness Support



Group Mirrors



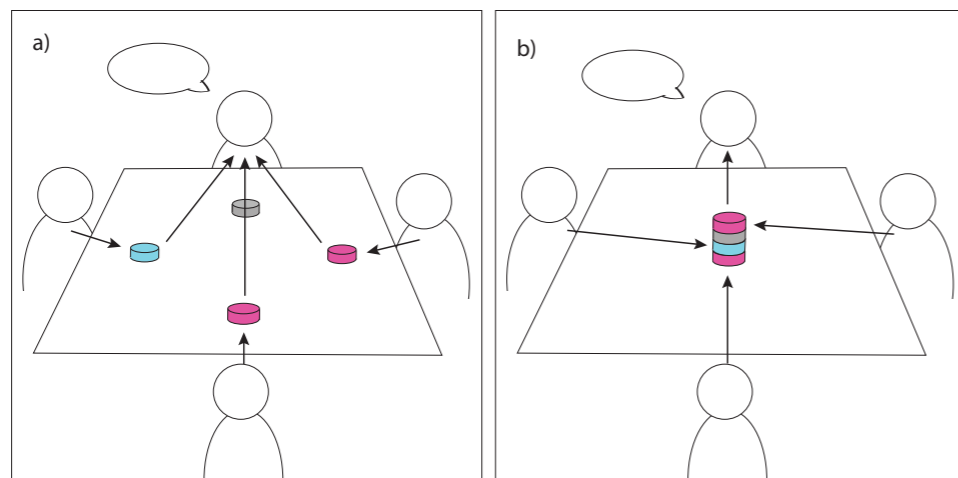
Trends in CSCW



Investigating the influence of different aspects of feedback on argumentation



Group members provide feedback to each other about the quality of argumentation.



We developed light objects that can be controlled via smartphones for that purpose and compared an identifiable and an anonymous version.

What influence do individual variables (position of the feedback, amount of feedback) have on group processes?

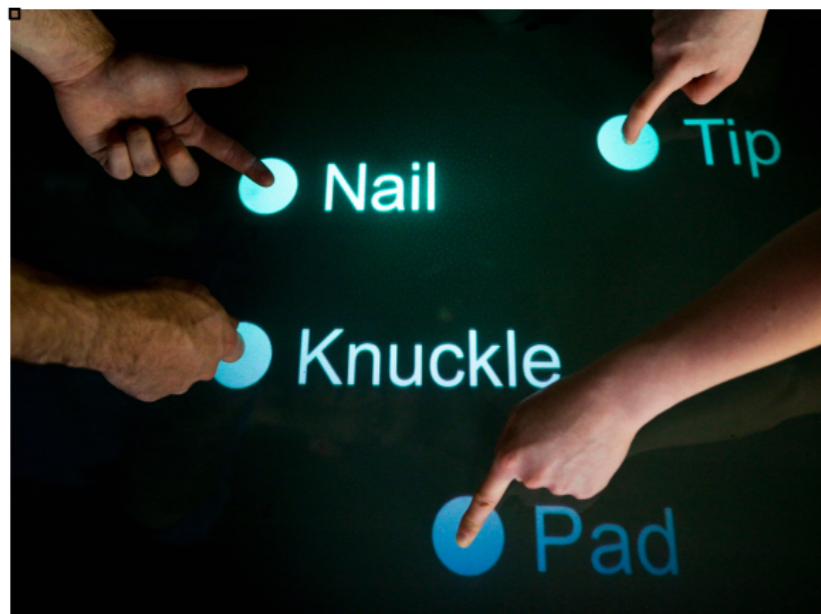
Certainly Uncertain but Probably Predictable: Modelling User Behaviour in Mobile HCI

Modelling User Behaviour in Mobile HCI

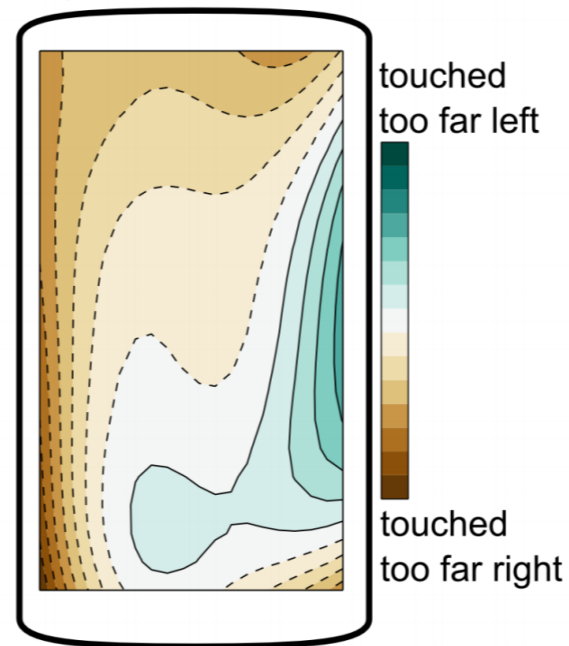
Grand Goal: Make „smart“ devices (at least a bit) smart...

... with informed assumptions (=models) about users,

e.g. for touch:



„Rich touch“: *How?*



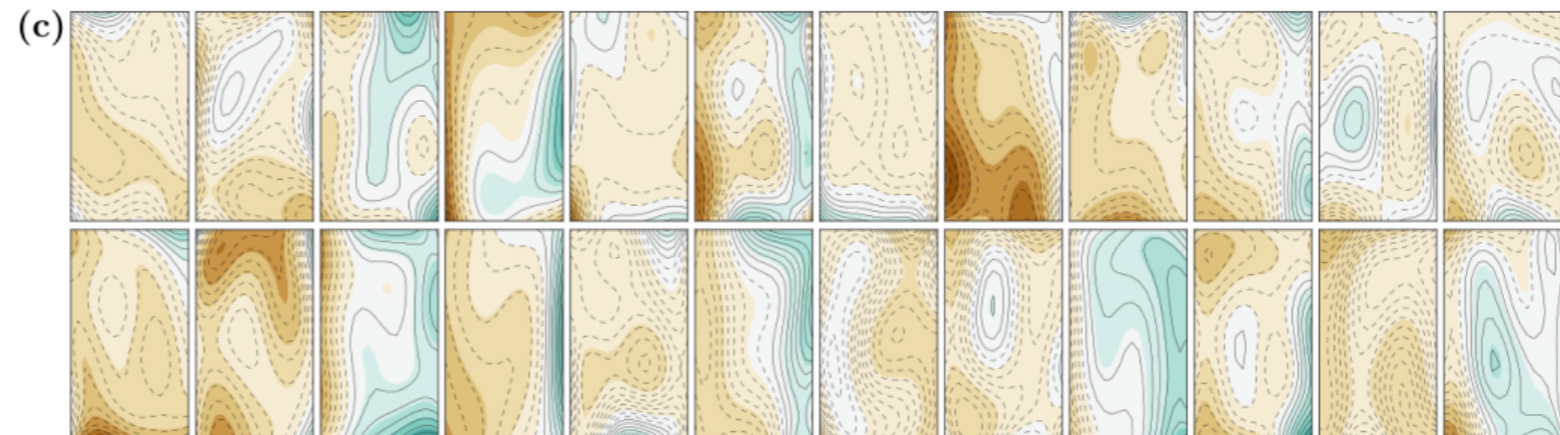
Targeting: *Where?*



Typing: *What?*

Modelling User Behaviour - Project

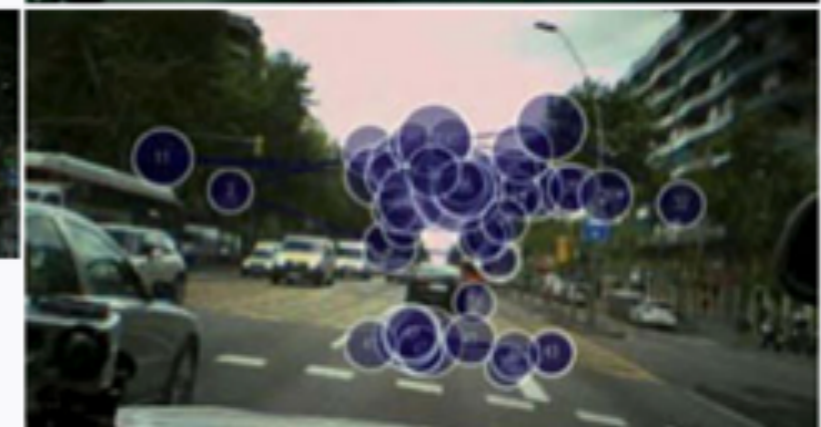
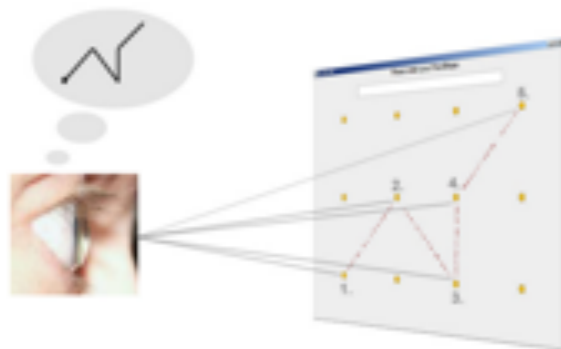
- **Background:** Touch targeting models predict where users wanted to touch
→ improve touch accuracy
- **Previous research:** These models are highly individual!
i.e. they look different for different users:



- **Question:** Are models still individual across mobile conditions (walking/standing)?
- **Project – Conduct a user study to find out!**
1. Record touch targeting data
 2. Analyse (models already implemented)
- Is it better to predict current touches with a model from:
- Same user, but different condition (walking/standing)?
 - Same condition, but different user?

Usable Gaze-based Interaction

Eye-tracking based Interaction

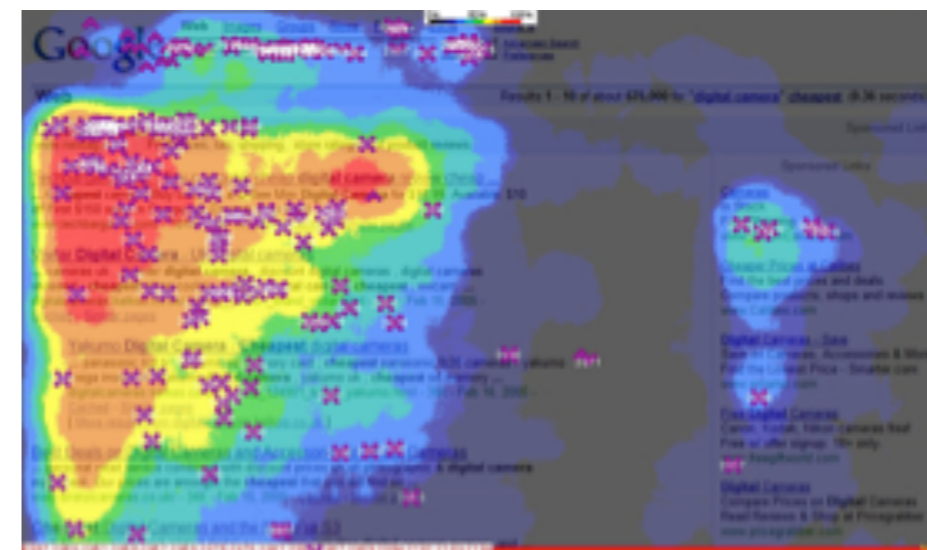


Conscious driving P3

Driving subconscious P11

DANS, KÖN OCH JAGPROJEKT

På jakt efter ungdomars kroppsspråk och den "synkretiska dansen", en sammansättning av olika kulturers dans, har jag i mitt fältarbete under hösten rörligt på olika arenor inom skolans värld. Nordiska, afrikanska, syd- och östeuropeiska ungdomar gör sina röster hörda genom sång, musik, skrik, skraff och gestaltar känslor och uttryck med hjälp av kroppsspråk och dans.



Eye-tracking based Interaction



Project Ideas

- Multiplayer gaze-based games
- Multimodal authentication
- Gaze-based Voting
 - Voting using your eyes
 - Can we deduce the voting decision from gaze-data?

Interactive Tabletops and Surfaces

Interactive Surfaces

Interactive Surfaces denote a broad topic that includes for example interactive furniture (e.g. tables), interactive walls and floors, arbitrary shaped objects with interactive surfaces or the integration of screens with different form factors. This lecture discusses the history of interactive surfaces and concerns touch technologies, interaction techniques and areas of application.



Literature:

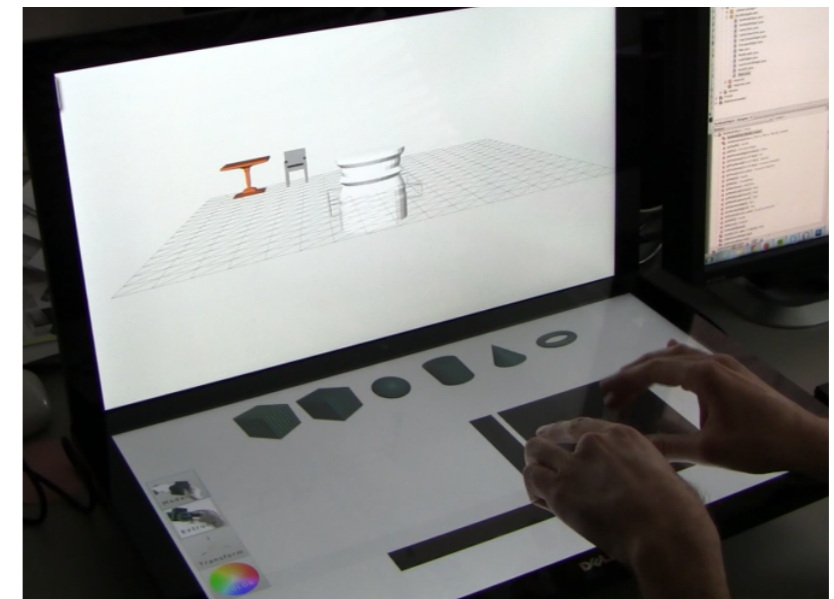
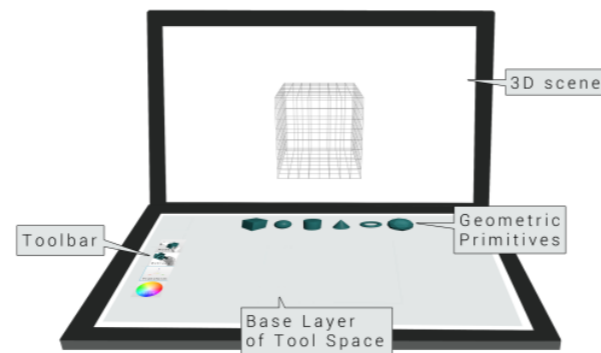
Pierre Wellner. 1993. Interacting with paper on the DigitalDesk. *Commun. ACM* 36, 7 (July 1993), 87-96.

Jefferson Y. Han. 2005. Low-cost multi-touch sensing through frustrated total internal reflection. In *Proceedings of the 18th annual ACM symposium on User interface software and technology (UIST '05)*. ACM, New York, NY, USA, 115-118.

Project

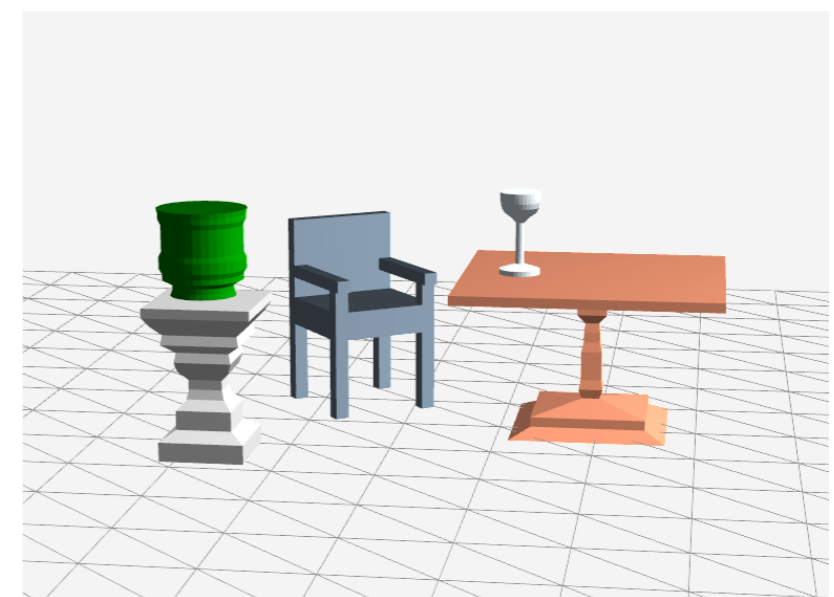
Evaluation of a touch-based 3D-modeling prototype

FAD – Finger Aided Design: Two touch screens and touch tools on the horizontal display that allow bimanual polygon-based 3D modeling.



Task:

- Recruit 3-4 participants
- Train them to become expert users
- Design and conduct a “long term” study
- Report your findings



Through-the-Lens Controls

Through-the-Lens Control

New ways in Cinematography

Axel Hösl



Follow Focus with Arduino

Code already exists!



Brain Computer Interfaces



Brain Computer Interfaces

Mariam Hassib

Brain Emoticons in Chat 😊

Want to know what your friend/partner is really feeling while chatting online?

Using off-the-shelf BCI devices, emotions and mental states such as “Concentration”, “Meditation”, “Happiness”, “Excitement”, “Boredom” will be detected via brain signals and communicated during chats.

Open Questions:

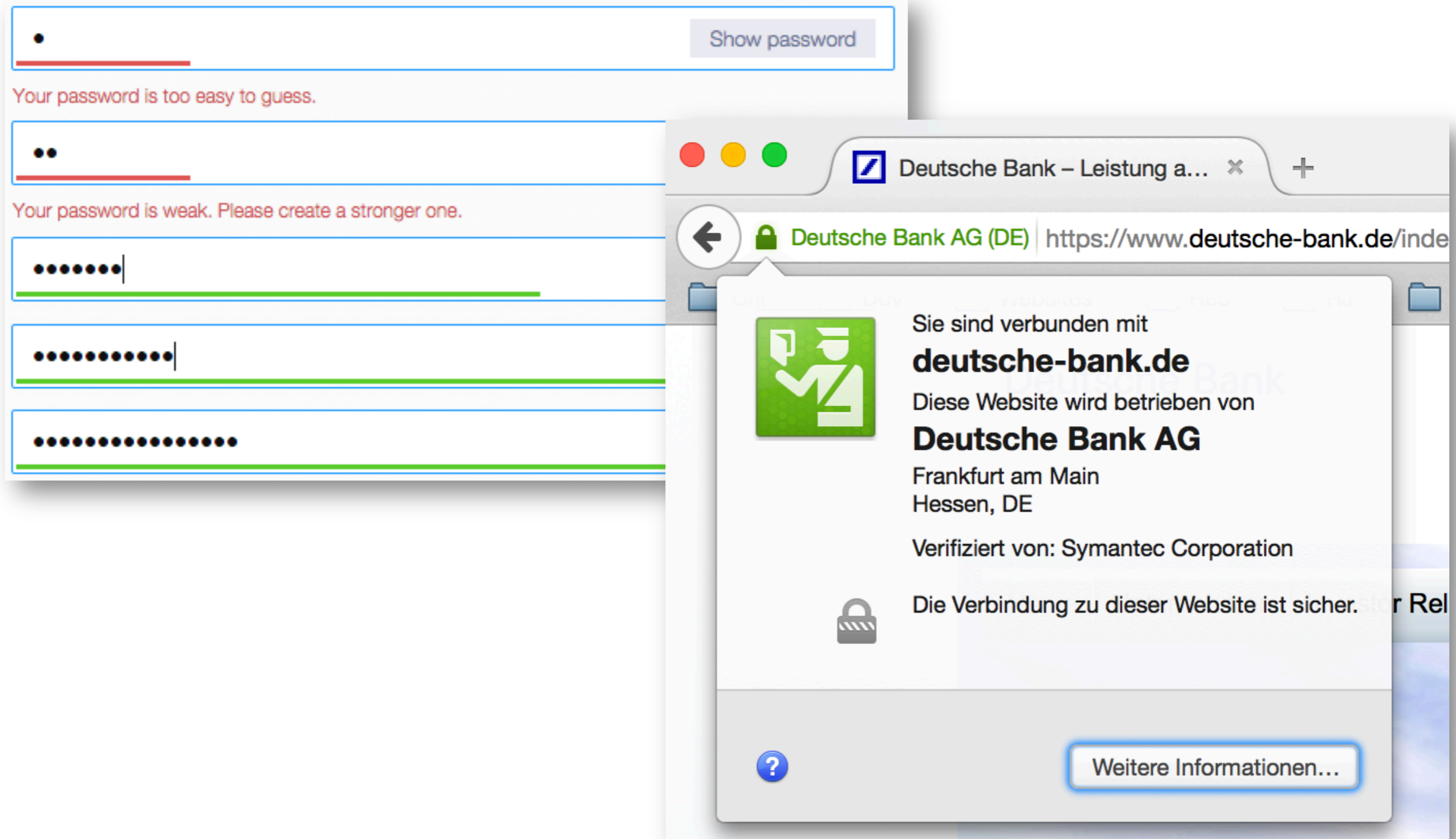
- How to interpret brain data?
- How often?
- How to visualize that in chat?
- Effects on both sides
- Other use-cases for such an application



Volker Hartmann/AFP/[Getty Images](#)

Usable Security and Privacy I - Establishing and Breaking Trust on the Web

Establishing and Breaking Trust on the Web



Project: The MirrorMeter

- **Research Question:**

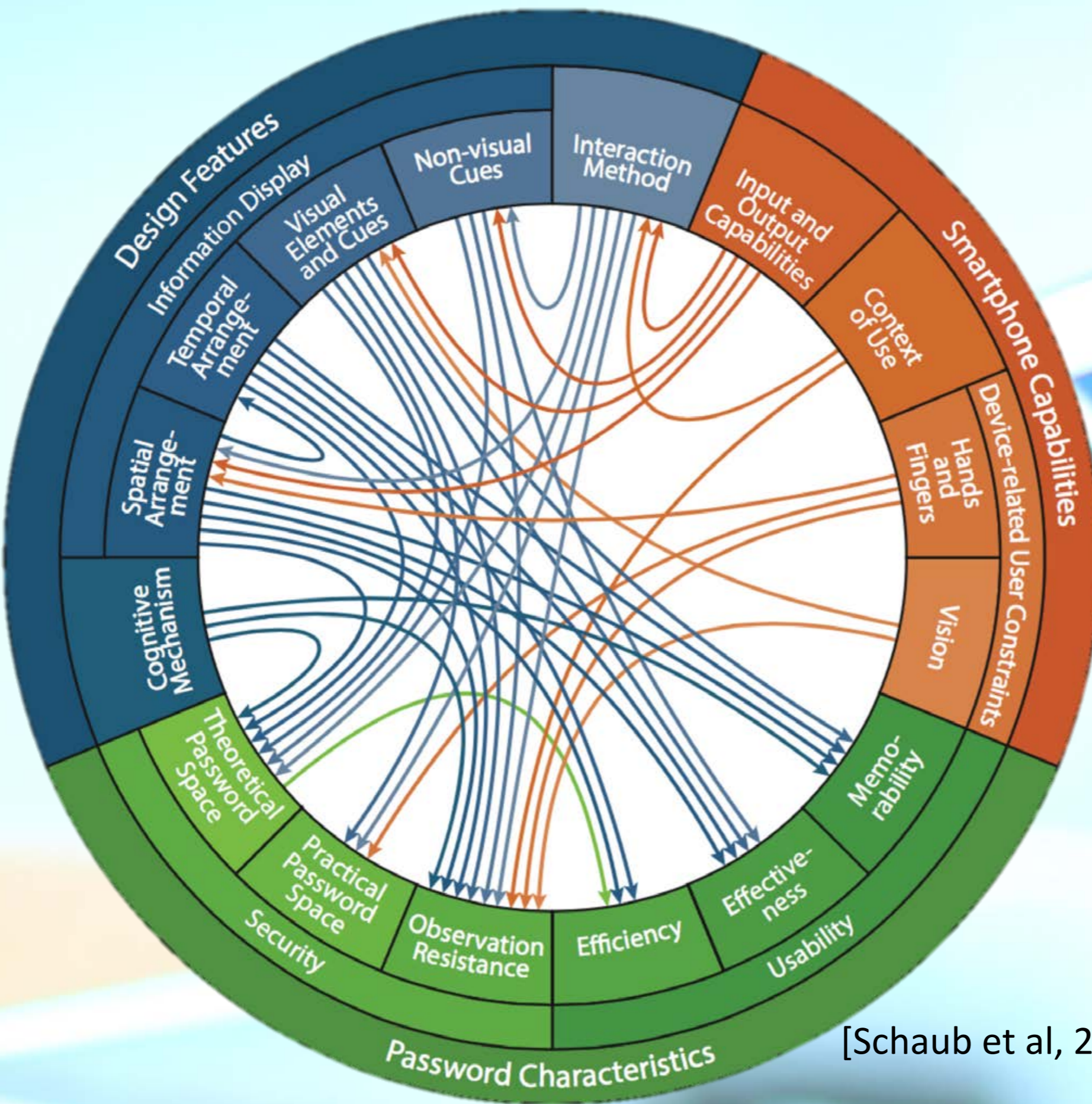
Does seeing yourself while you enter a password lead to better passwords?

- **Tasks:**

- research for existing password strength meters (1 day)
- create a concept (1 day)
- iterate the design with users in the field (coffee shop study) (1 day)
- implement the prototype (4 days)
- evaluate the prototype (3 days)

- **Advisor: Tobias Stockinger,**
tobias.stockinger@ifi.lmu.de

Usable Security and Privacy II - Authentication on Mobile Devices



[Schaub et al, 2013]

Quantifying Shoulder Surfing Risks in the Wild

Emanuel von Zezschwitz



- Literature Review
- Evaluation Concept
- Case Study
- Evaluation
- Report

mHealth - Addressing our Unconscious Self

Health and Wellbeing Technology

Understanding Use and Non-Use



FREE
LETICS

Freeletics, Fitbit, Jawbone Up & Co

- **Questions:** What motivates people to use mHealth technology? Does mHealth help users achieve their goals?
- **Method:** Online Survey, Focus Groups, Interviews



Computer-Facilitated Collaboration and Argumentation

Computer-facilitated collaboration and argumentation

Combining learning and HCI research topics

Fysaraki Maria



HCI and the Learning Sciences: Exploring Design and Usability Aspects of Collaborative Learning Systems



Co-located vs. Online CSCL systems



Pic 1: <http://www.thecompleteuniversityguide.co.uk/strathclyde>
Pic 2: 360logica.com

The main questions are:

- how can the Learning Sciences benefit from HCI methods (e.g., usability, rapid prototyping, user centred design)?
- what can the Learning Sciences learn from the HCI research field (e.g., being aware of related work)?

Tasks:

1. research for **design synergies** in **computer supported collaborative learning systems (CSCL)**. (1 day)
2. create a concept map of the **design synergies** (1 day)
3. test and compare design features of two online **CSCL** systems with users in the field (1 day)
4. implement a prototype based on the results of step 3 (4 days)
5. evaluate the prototype (3 days)