LMU
LUDWIG-
MAXIMILIANS-
UNIVERSITÄT
MÜNCHEN

FAKULTÄT FÜR MATHEMATIK, INFORMATIK UND STATISTIK
INSTITUT FÜR INFORMATIK
ARBEITSGRUPPEN MEDIENINFORMATIK UND
MENSCH-MASCHINE-INTERAKTION

Hauptseminar WS20/21
Topics

Please notice the number of the slide
you are interested in

Media Informatics munich

Wissenschaftlicher Betreuer:
Ceenu George, Sylvia Rothe, Kai Holländer
Verantwortlicher Professor:
Prof. Dr. Heinrich Hussmann

Pedestrian Behvior when crossing roads

- How do pedestrians behave when crossing roads?
- What does that mean for automated vehicles?
- How can pedestrian behavior be observed?

Supervisor: Kai Holländer

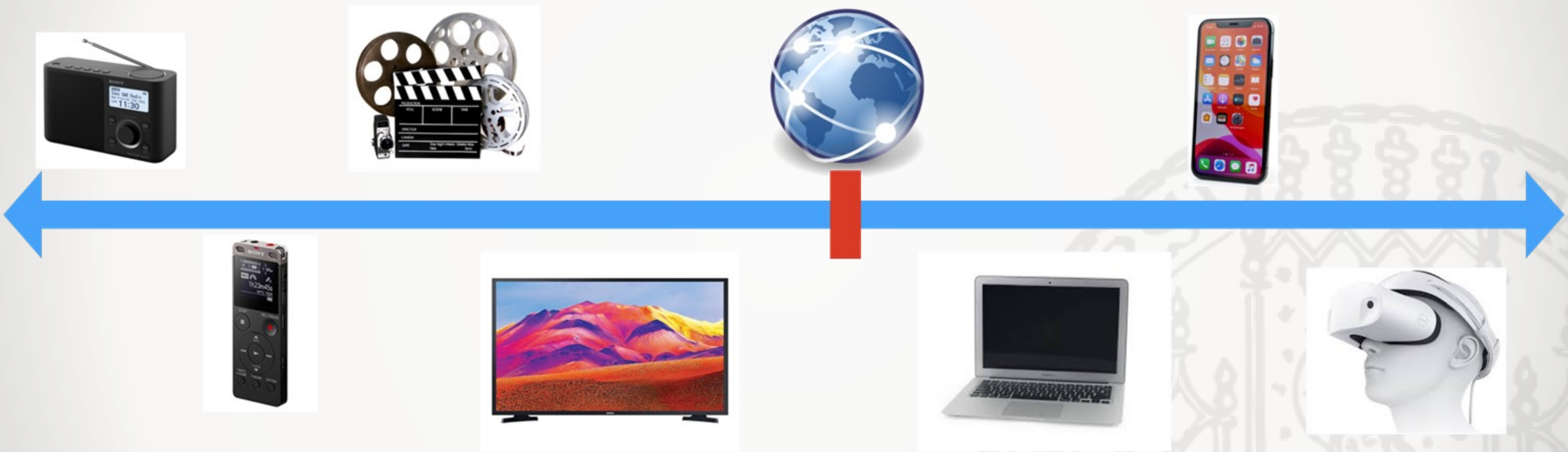
Pedeastrian Guidance in urban traffic

- How can pedestrians be guided when crossing roads?
- What does that mean for automated vehicles and external vehicle human-machicne interfaces (eHMIs)?
- How could mobile devices, such as smartphones be included?

Supervisor: Kai Holländer

Presence besides VR

Presence in everyday life



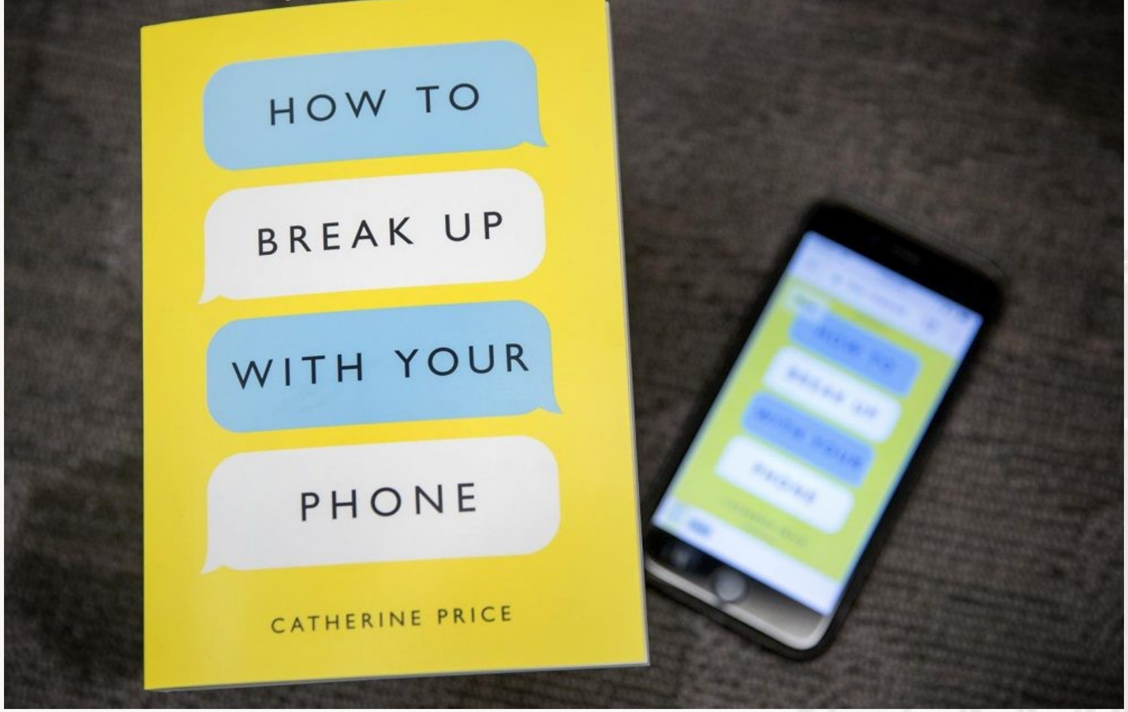
Supervisor: Nađa Terzimehić (nadja.terzimehic@ifi.lmu.de)

Kim, T., & Biocca, F. (1997). Telepresence via television: Two dimensions of telepresence may have different connections to memory and persuasion. Journal of computer-mediated communication, 3(2), JCMC325.
Lee, K. M. (2004). Presence, explicated. Communication theory, 14(1), 27-50.
Skarbez, R., Brooks, Jr, F. P., & Whitton, M. C. (2017). A survey of presence and related concepts. ACM Computing Surveys (CSUR), 50(6), 1-39.

When disengagement is the goal

Designing mobile technology for intentional non-use

https://www.wbur.org/hereandnow/2018/03/01/break-up-with-phone-catherine-price



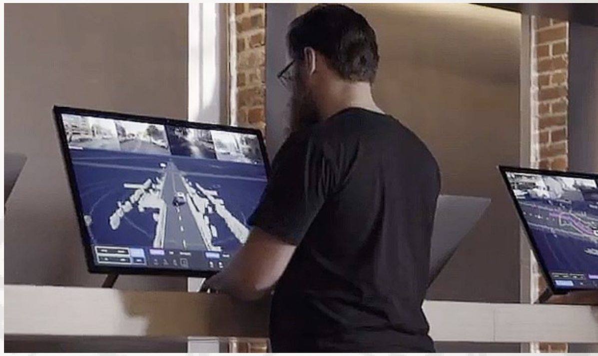
Supervisor: Nađa Terzimehić (nadja.terzimehic@ifi.lmu.de)

Baumer, E. P., Burrell, J., Ames, M. G., Brubaker, J. R., & Dourish, P. (2015). On the importance and implications of studying technology non-use. interactions, 22(2), 52-56.
Lukoff, K., Lyngs, U., Gueorguieva, S., Dillman, E. S., Hiniker, A., & Munson, S. A. (2020, July). From Ancient Contemplative Practice to the App Store: Designing a Digital Container for Mindfulness. In Proceedings of the 2020 ACM Designing Interactive Systems Conference (pp. 1551-1564).
Tran, J. A., Yang, K. S., Davis, K., & Hiniker, A. (2019, May). Modeling the engagement-disengagement cycle of compulsive phone use. In Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (pp. 1-14).
https://www.wbur.org/hereandnow/2018/03/01/break-up-with-phone-catherine-price

A comparison and exploration of vehicle teleoperation visual interfaces

Phantom Auto

Nissan in coll. with NASA



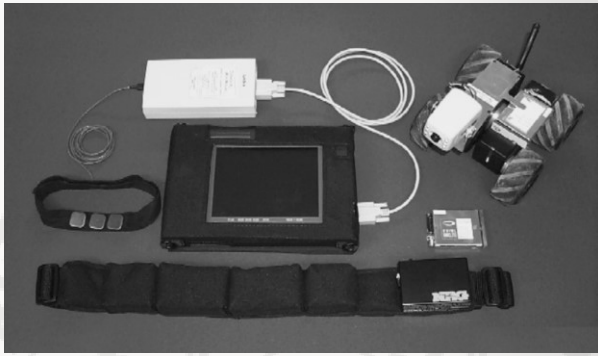
Zoox

Supervisor: Gaetano Graf

Review of Human–Machine Interfaces for vehicle teleoperation

A mobile robot controlled through a haptic device.

An operator guide a vehicle via gesture.



A small mobile robot controlled via brainwave.

Collaborative Learning Environments in Augmented Reality

Wanis (2019). A review on collaborative learning environment across virtual and augmented reality technology.

Supervisor: Sylvia Rothe

Collaborative Learning Environments in Virtual Reality

Wanis (2019). A review on collaborative learning environment across virtual and augmented reality technology.

Interaction Designs of AR Applications for Museums

Trunfio et al. (2020). A visitors' experience model for mixed reality in the museum

Bekele et al. (2018). A survey of augmented, virtual, and mixed reality for cultural heritage

Hammady et al. (2020). Design and development of a spatial mixed reality touring guide to the Egyptian museum.

Supervisor: Sylvia Rothe

Interaction Designs of VR Applications for Museums

Trunfio et al. (2020). A visitors' experience model for mixed reality in the museum

Bekele et al. (2018). A survey of augmented, virtual, and mixed reality for cultural heritage

Schofield et al. (2018). Viking VR: Designing a virtual reality experience for a museum.

Supervisor: Sylvia Rothe

Haptic Feedback for VR interaction in Confined Spaces

Jingyi Li
jingyi.li@ifi.lmu.de

Research Questions:

1. What kinds of VR interactions/tasks can be supported via haptic feedback in confined spaces?
2. What aspects of a confined space can be designed to offer haptic feedback and how?
3. What and how to measure the influence of haptic feedback on VR interaction?

Tasks:

1. Search keyword in ACM digital library ("haptic feedback", "VR interaction", "tangible", "confined space", "tactile", etc.);
2. Identify categories of VR interaction/tasks that benefit from haptic feedback;
3. Identify categories of haptic feedbacks in a confined space;
4. Identify measurement criteria and methods of haptic feedback in VR interaction.

References:
[1] Carvalheiro, C., Nóbrega, R., da Silva, H., & Rodrigues, R. (2016). User Redirection and Direct Haptics in Virtual Environments. Proceedings of the 24th ACM International Conference on Multimedia, 1146–1155. *https://doi.org/10.1145/2964284.2964293*
[2] Kitamura, Y., Takashima, K., & Fujita, K. (2018). Designing dynamic aware interiors. *Proceedings of the 24th ACM Symposium on Virtual Reality Software and Technology*, 1–2. https://doi.org/10.1145/3281505.3281603

Motion-sickness in Passenger Use of MR Headsets

Jingyi Li
jingyi.li@ifi.lmu.de

Research Questions:

1. What are the causes of motion-sickness of MR headsets usage by a passenger?
2. What are the corresponding solutions in MR application design?

Tasks:

1. Search keywords in ACM digital library (“motion-sickness”,“simulation sickness”,“VR”,“AR”, “MR”etc.);
2. Identify categories of causes of motion-sickness during the use of MR headsets;
3. Identify corresponding solutions.

References:
[1] Stevens, A. H., & Butkiewicz, T. (2019). Reducing Seasickness in Onboard Marine VR Use through Visual Compensation of Vessel Motion. 2019 IEEE Conference on Virtual Reality and 3D User Interfaces (VR), 1872–1873. *https://doi.org/10.1109/VR.2019.8797800*
[2] McGill, M., Williamson, J., Ng, A., Pollick, F., & Brewster, S. (2019). Challenges in passenger use of mixed reality headsets in cars and other transportation. *Virtual Reality*. https://doi.org/10.1007/s10055-019-00420-x

Social Acceptability of Natural Interaction in Public Transportation

Jingyi Li
jingyi.li@ifi.lmu.de

Research Questions:

1. What are the appropriate natural interaction from an end user/passsenger's perspective in the public transportation context?
2. What are the challenges in the social acceptability of such interaction?
3. What might be the corresponding solutions?

Tasks:

1. Search keywords in ACM digital library ("social acceptability/experience ","natural interaction","public transportation", etc.);
2. Identify categories of natural interaction in public transportation;
3. Identify the problems and corresponding solutions in the identified context.

References:
[1] Williamson, J. R., McGill, M., & Outram, K. (2019). PlaneVR: Social Acceptability of Virtual Reality for Aeroplane Passengers. Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems, 1–14. https://doi.org/10.1145/3290605.3300310
[2] Taniberg, A., Botin, L., & Stec, K. (2018). Context of use affects the social acceptability of gesture interaction. Proceedings of the 10th Nordic Conference on Human-Computer Interaction, 731–735. https://doi.org/10.1145/3240167.3240250

Explainable AI to Support Software Developers

W. Jin, S. Carpendale, G. Hamarneh, D. Gromala: Bridging AI Developers and End Users: An End-User-Centred Explainable AI Taxonomy and Visual Vocabularies.

D. Wang, Q. Yang, A. Abdul, B. Y. Lim: Designing Theory-Driven User-Centric Explainable AI.

A. Preece, D. Harborne, D. Braines, R. Tomsett: Stakeholders in Explainable AI.

Supervisor: Thomas Weber

Tools for Explaining AI Systems

M. T. Ribeiro, S. Singh, C. Guestrin: "Why Should I Trust You?": Explaining the Predictions of Any Classifier. KDD 2016: 1135-1144

W. Samek, T. Wiegand, K. Müller: Explainable Artificial Intelligence: Understanding, Visualizing and Interpreting Deep Learning Models. CoRR abs/1708.08296 (2017) A. Mordvintsev, C. Olah,

M. Tyka: Inceptionism: Going Deeper into Neural Networks. Google AI Blog, June 17, 2015 (https://ai.googleblog.com/2015/06/inceptionism-going-deeper-into-neural.html)

Supervisor: Thomas Weber

Metaphors in Tangible Interface Design

Celentano, Augusto & Dubois, Emmanuel. (2015). Evaluating Metaphor Reification in Tangible Interfaces. Journal on Multimodal User Interfaces. 9. 10.1007/s12193-015-0198-z.

Holly Robbins, Elisa Giaccardi, and Elvin Karana. 2016. Traces as an Approach to Design for Focal Things and Practices. In Proceedings of the 9th Nordic Conference on Human-Computer Interaction (NordiCHI '16). Association for Computing Machinery, New York, NY, USA, Article 19, 1–10. DOI:https://doi-org.emedien.ub.uni-muenchen.de/10.1145/2971485.2971538

Fisher, 2004. What we touch, touches us: materials, affects and affordances

Himanshu Verma, Guillaume Pythoud, Grace Eden, Denis Lalanne, and Florian Evéquoz. 2019. Pedestrians and Visual Signs of Intent: Towards Expressive Autonomous Passenger Shuttles. Proc. ACM Interact. Mob. Wearable Ubiquitous Technol. 3, 3, Article 107 (September 2019), 31 pages. DOI:https://doi-org.emedien.ub.uni-muenchen.de/10.1145/3351265

Supervisor: Linda Hirsch

Embedded versus mobile urban interfaces

Wiethoff and Hußmann, 2017. Media Architecture: Using Information and Media as Construction Material. https://doi.org/10.1515/9783110453874

Ju-Chun Ko, Li-Wei Chan, and Yi-Ping Hung. 2010. Public issues on projected user interface. In CHI '10 Extended Abstracts on Human Factors in Computing Systems (CHI EA '10). Association for Computing Machinery, New York, NY, USA, 2873–2882. DOI:https://doi-org.emedien.ub.uni-muenchen.de/10.1145/1753846.1753874

Nilsson, Erik & Rahlff, Odd-Wiking. (2003). Mobile and Stationary User Interfaces - Differences and Similarities Based on Two Examples.

Supervisor: Linda Hirsch

Shape-shifting Materials or Mechanisms for Prototyping in Urban Context

Isabel P. S. Qamar, Katarzyna Stawarz, Simon Robinson, Alix Goguey, Céline Coutrix, and Anne Roudaut. 2020. Morphino: A Nature-Inspired Tool for the Design of Shape-Changing Interfaces. In Proceedings of the 2020 ACM Designing Interactive Systems Conference (DIS '20). Association for Computing Machinery, New York, NY, USA, 1943–1958. DOI:https://doi-org.emedien.ub.uni-muenchen.de/10.1145/3357236.3395453

Vazquez, Elena & Randall, Clive & Duarte, Jose. (2019). Shape-changing Architectural Skins: A Review on Materials, Design and Fabrication Strategies and Performance Analysis. 7. 93-114. 10.7480/jfde.2019.2.3877.

Karmen Franinović and Luke Franzke. 2019. Shape Changing Surfaces and Structures: Design Tools and Methods for Electroactive Polymers. In Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19). Association for Computing Machinery, New York, NY, USA, Paper 125, 1–12. DOI:https://doi-org.emedien.ub.uni-muenchen.de/10.1145/3290605.3300355

Supervisor: Linda Hirsch

Sensitive Design

Dina Sabie, Samar Sabie, and Syed Ishtiaque Ahmed. 2020. Memory through Design: Supporting Cultural Identity for Immigrants through a Paper-Based Home Drafting Tool. In Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI '20). Association for Computing Machinery, New York, NY, USA, 1–16. DOI:https://doi-org.emedien.ub.uni-muenchen.de/10.1145/3313831.3376636

Daisy Yoo. 2017. Stakeholder Tokens: A Constructive Method for Value Sensitive Design Stakeholder Analysis. In Proceedings of the 2017 ACM Conference Companion Publication on Designing Interactive Systems (DIS '17 Companion). Association for Computing Machinery, New York, NY, USA, 280–284. DOI:https://doi-org.emedien.ub.uni-muenchen.de/10.1145/3064857.3079161

Daisy Yoo, Katie Derthick, Shaghayegh Ghassemian, Jean Hakizimana, Brian Gill, and Batya Friedman. 2016. Multi-lifespan Design Thinking: Two Methods and a Case Study with the Rwandan Diaspora. In Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI '16). Association for Computing Machinery, New York, NY, USA, 4423–4434. DOI:https://doi-org.emedien.ub.uni-muenchen.de/10.1145/2858036.2858366

Supervisor: Linda Hirsch

Beyond Thumbs-Up and -Down: Interaction Techniques for Richer User Input to Machine Learning Algorithms

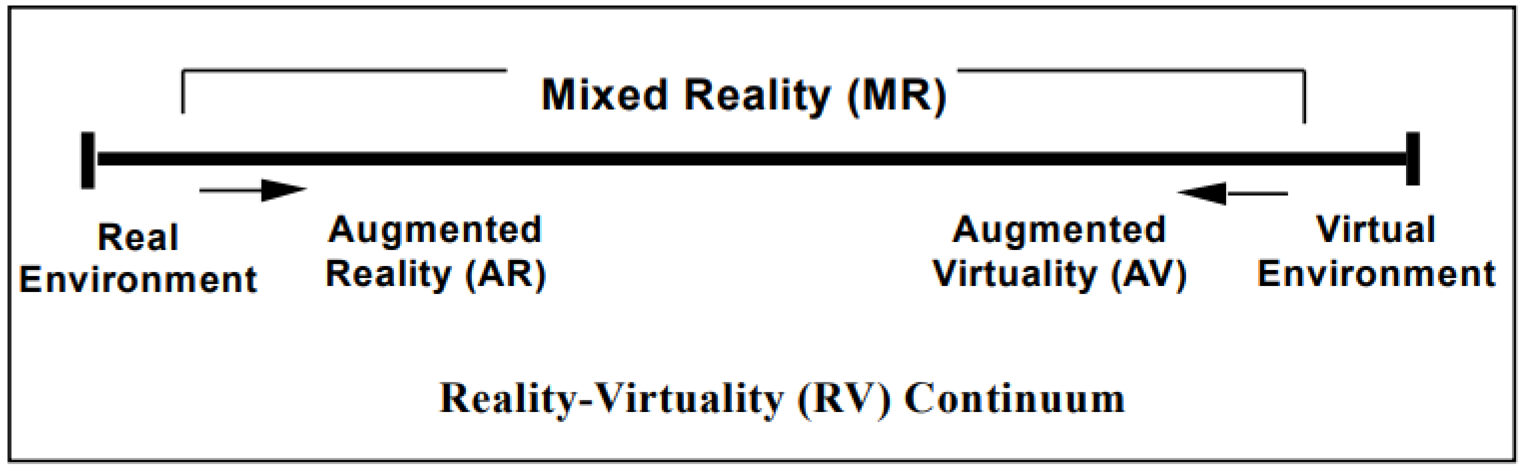
Dina Sabie, Samar Sabie, and Syed Ishtiaque Ahmed. 2020. Memory through Design: Supporting Cultural Identity for Immigrants through a Paper-Based Home Drafting Tool. In Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI '20). Association for Computing Machinery, New York, NY, USA, 1–16. DOI:https://doi-org.emedien.ub.uni-muenchen.de/10.1145/3313831.3376636

Daisy Yoo. 2017. Stakeholder Tokens: A Constructive Method for Value Sensitive Design Stakeholder Analysis. In Proceedings of the 2017 ACM Conference Companion Publication on Designing Interactive Systems (DIS '17 Companion). Association for Computing Machinery, New York, NY, USA, 280–284. DOI:https://doi-org.emedien.ub.uni-muenchen.de/10.1145/3064857.3079161

Daisy Yoo, Katie Derthick, Shaghayegh Ghassemian, Jean Hakizimana, Brian Gill, and Batya Friedman. 2016. Multi-lifespan Design Thinking: Two Methods and a Case Study with the Rwandan Diaspora. In Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI '16). Association for Computing Machinery, New York, NY, USA, 4423–4434. DOI:https://doi-org.emedien.ub.uni-muenchen.de/10.1145/2858036.2858366

Supervisor: Tony Zhang

Physicalization of Hidden Data: From the Virtual to the Real



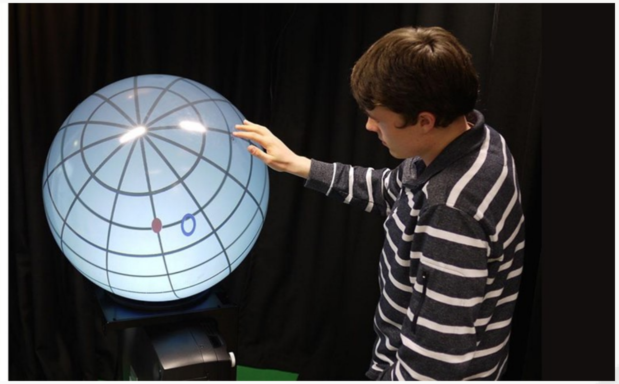
[4]

[5]

[6]

Augmented Reality (AR) Augmented Virtuality (AV)

Interaction Techniques with Physical Spheres in AR and VR



Real and Simulated Spherical Displays

Perspective Corrected Spherical Displays

Tangible Spherical Devices, in VR and AR

Englmeier, David, et al. "A Tangible Spherical Proxy for Object Manipulation in Augmented Reality." 2020 IEEE Conference on Virtual Reality and 3D User Interfaces (VR). IEEE, 2020

Berard, Francois, and Thibault Louis. "The object inside: Assessing 3d examination with a spherical handheld perspective-corrected display." Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems. 2017

Miyafuji, Shio, et al. "Qoom: An interactive omnidirectional ball display." Proceedings of the 30th annual acm symposium on user interface software and technology. 2017.

Supervisor: David Englmeier

Tangible user interface for learning

Supervisor: Amy Li

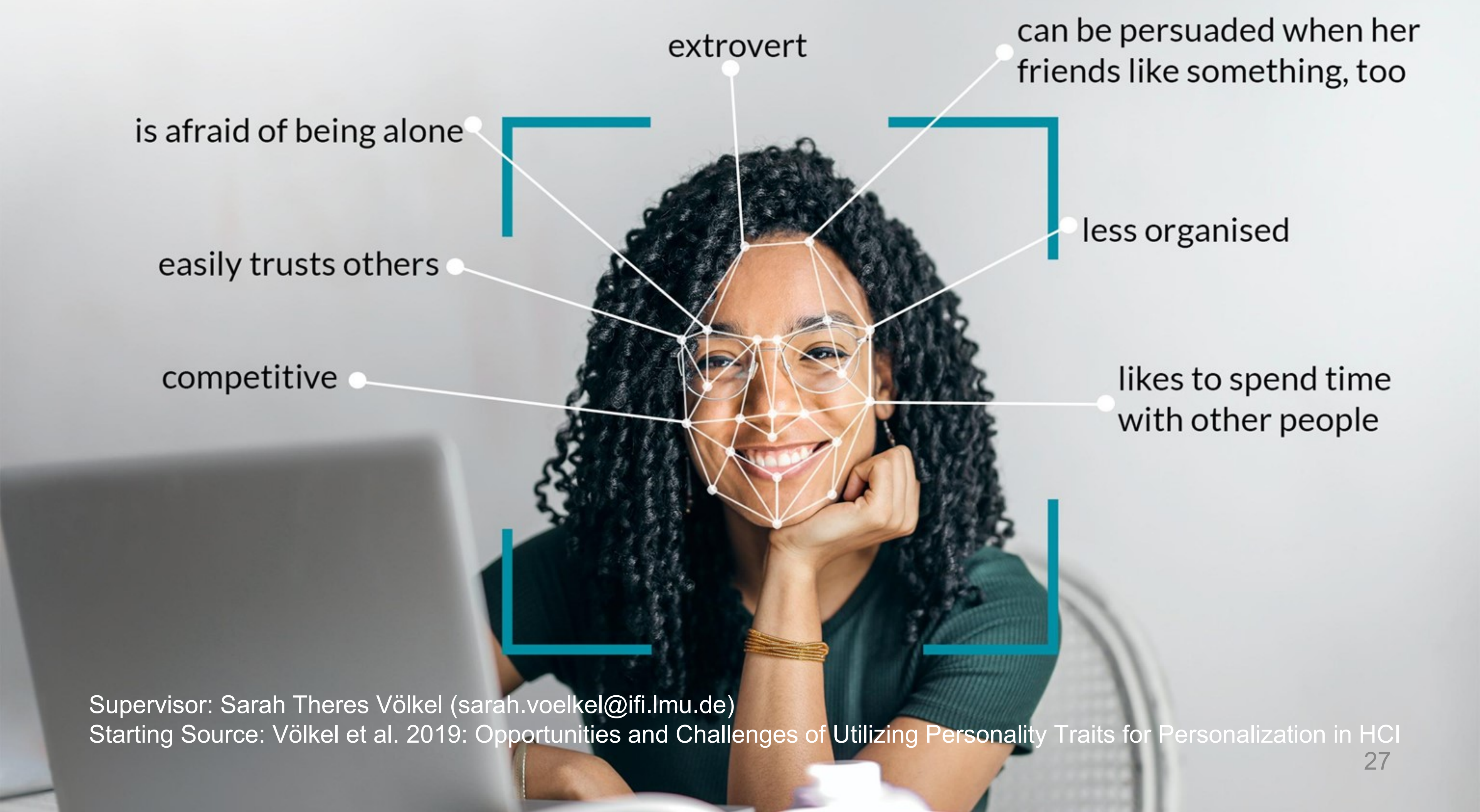
Tangible interaction for creative learning

Supervisor: Amy Li

Continuous Improvement in Biometric Systems

Supervisor: Lukas Mecke

User Personality as an Input for the Personalisation of Intelligent Systems



Supervisor: Sarah Theres Völkel (sarah.voelkel@ifi.lmu.de)
Starting Source: Völkel et al. 2019: Opportunities and Challenges of Utilizing Personality Traits for Personalization in HCI

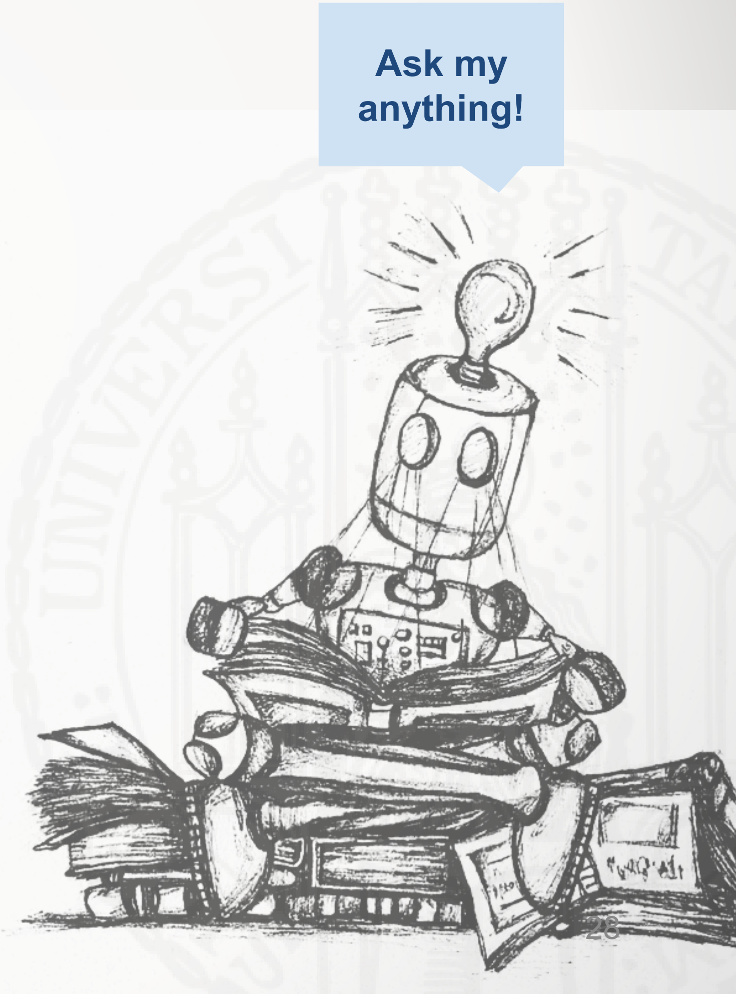
Ask my anything (about your docs)!

Review of human-AI interaction with text documents

Supervisor: michael.chromik@ifi.lmu.de

Modern language models *(BERT or OpenGPT)* allow novel ways of digital assistance with text documents

- What use cases for natural language interaction with text documents have been discussed?
- What human-AI interaction patterns for have been proposed for text documents?



Hoeve et al., Conversations with Documents: An Exploration of Document-Centered Assistance (2020)

Yang et al. Sketching NLP: A Case Study of Exploring the Right Things To Design with Language Intelligence (2019)

2	Pedestrian Behavior when crossing roads	kai.hollaender@ifi.lmu.de	Felix
3	Pedeastrian Guidance in urban traffic	kai.hollaender@ifi.lmu.de	Dominik
4	(Tele)Presence besides VR	nadja.terzimehic@ifi.lmu.de	Chau
5	When disengagement is the goal: Designing mobile technology for intentional non-use	nadja.terzimehic@ifi.lmu.de	Miriam
6	A comparison and exploration of vehicle teleoperation visual interfaces.	Gaetano.Graf@bmw.de	Aleksa
7	Review of Human–Machine Interfaces for vehicle teleoperation.	Gaetano.Graf@bmw.de	Aleksa
8	Collaborative Learning Environments in AR	sylvia.rothe@ifi.lmu.de	Alex
9	Collaborative Learning Environments in VR	sylvia.rothe@ifi.lmu.de	Denis
10	Interaction Designs of VR Applications for Museums	sylvia.rothe@ifi.lmu.de	
11	Interaction Designs of AR Applications for Museums	sylvia.rothe@ifi.lmu.de	Michael
12	Haptic Feedback for VR interaction in Confined Spaces	jingyi.li@ifi.lmu.de	Alexandra
13	Motion-sickness in Passenger Use of MR Headsets	jingyi.li@ifi.lmu.de	Carina
14	Social Acceptability of Natural Interaction in Public Transportation	jingyi.li@ifi.lmu.de	
15	Explainable AI to Support Software Developers	thomas.weber@ifi.lmu.de	
16	Tools for Explaining AI Systems	thomas.weber@ifi.lmu.de	Maximilian
17	Metaphors in Tangible Interface Design	linda.hirsch@ifi.lmu.de	Gökay
18	Embedded versus mobile urban interfaces	linda.hirsch@ifi.lmu.de	Iuliia
19	Shape-shifting Materials or Mechansims for Prototyping in Urban Context	linda.hirsch@ifi.lmu.de	Ziyang
20	Sensitive Design	linda.hirsch@ifi.lmu.de	Sandra
21	Beyond Thumbs-Up and -Down: Interaction Techniques for Richer User Input to Machine Learning Algorithms	Tony zhang@fortiss.org	
22	Physicalization of Hidden Data - Transitioning from the Virtual to the Real World	ceenu.george@ifi.lmu.de	
23	Interaction Techniques with Physical Spheres in AR and VR	david.englmeier@ifi.lmu.de	
24	Tangible user interface for learning	Amy yanhong.li@ifi.lmu.de	Jenny
25	Tangible interaction for creative learning	Amy yanhong.li@ifi.lmu.de	Meng
26	Continuous Improvement in Biometric Systems	lukas.mecke@ifi.lmu.de	
27	User personality as an input for the personalisation of intelligent systems	sarah.voelkel@ifi.lmu.de	Bettina W.
28	Ask my anything (about your docs)! A review of human-AI interaction with text documents	michael.chromik@ifi.lmu.de	Ruben