LMU
LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN
FAKULTÄT FÜR MATHEMATIK, INFORMATIK UND STATISTIK
INSTITUT FÜR INFORMATIK
ARBEITSGRUPPEN MEDIENINFORMATIK UND MENSCH-MASCHINE-INTERAKTION

Hauptseminar Medieninformatik

Media Informatics munich

Infos

Verantw. Dozent:

Prof. Dr. Butz

Betreuung:

Kai Holländer, Hanna Schneider

Website:

https://www.medien.ifi.lmu.de/lehre/ws1819/hs/

Voraussetzungen

- Nur für Medieninformatik Master
- Englische Sprachkenntnisse notwendig

- Teilnahme an **allen** Präsenzterminen
- 60-Sekunden-Vortrag und Besprechung
- Ausarbeitung auf Englisch (6-8 Seiten), Template auf Website

Zeitplan

23.10.18	**Einführung und Themenvergabe**
9.11.18	Abgabe der Gliederung
16.11.18	Abgabe der 1. Fassung und Folien für 60-Sekunden-Vorträge
20.11.18	**60-Sekunden-Vorträge (1. Termin)**
27.11.18	**60-Sekunden-Vorträge (2. Termin)**
4.12.18	Abgabe der vollständigen Ausarbeitung für Reviews
11.12.18	Abgabe der Reviews
7.1.19	Abgabe der finalen Ausarbeitung
14.1.19	Abgabe der vorläufigen Präsentation
15.1. - 27.1.19	Probevorträge mit Betreuer (optional)
28.1.19	Abgabe der finalen Präsentation
8.2.19	**Abschlusspräsentationen**

Ziel

Lernziel ist Wissenschaftliches Arbeiten:

- Selbstständige Literaturrecherche
- Analyse und Einordnung von Forschungsergebnissen
- Schreiben einer wissenschaftlichen Ausarbeitung

Wissenschaftliches Schreiben

- Plagiate vermeiden, richtig zitieren!

"Johnson et al. state that…[1,2,3]. Furthermore they…"

- Logische Struktur
- Klare und neutrale Sprache
- Korrekte (englische) Grammatik, keine Rechtschreibfehler (vorhandene Software / online tools nutzen)

Scientific Writing

Avoid:

- Fuzzy or unclear descriptions („high“, „little“, „almost“, ...)
- Empty phrases (e.g. „Based on these and various other findings...“)
- Filler words (e.g. „somewhat“, „indeed“, „remarkably“, ...)
- Tautologies (e.g. „LCD Display“ => LCD = Liquid Crystal Display)
- Pseudo arguments (e.g. „of course“, „as expected“, „without doubt“, ...)
- Unverifiable claims (e.g. “This is the best Hauptseminar ever!”)

Themen

- Jedes Thema wird **eigenständig** bearbeitet
- Besprechung aller Zwischenstadien der Ausarbeitung mit dem Betreuer
- Review von mindestens zwei Ausarbeitungen
- Probevortrag (optional)
- Vortrag (15 min + 5 min Diskussion) am Ende des Semesters

Themenvergabe

20 Teilnehmer | 17 Themen

CULTURAL DIFFERENCES FOR INTELLIGENT ASSISTANTS

What are critical design cues for intelligent assistants in different cultures?

Which use cases can show the value of personalization for an in-car voice assistant?

First Pointers:

doi.org/10.1145/3098279.3122137

doi.org/10.1145/2390256.2390283

doi.org/10.1145/3213586.3226198

doi.org/10.1145/3161175

doi.org/10.1007/978-3-319-91397-1_47

1

Building Trust through Explainability in Autonomous Driving

Supervisor: Gesa Wiegand, Thomas Weber

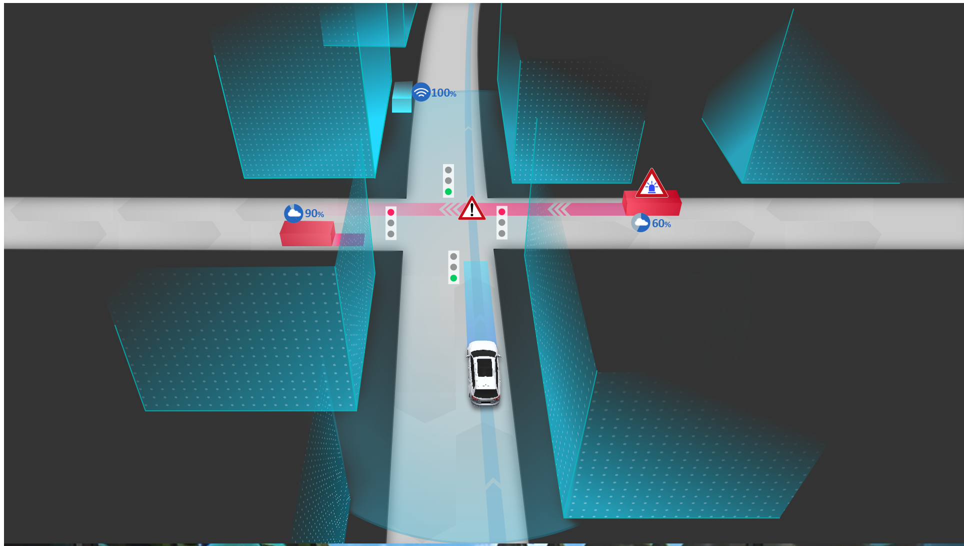
What needs to be explained?
Is it explained continuously or just special events?
How can you tell the driver what the car knows?

What is the benefit?
Does the trust increase?

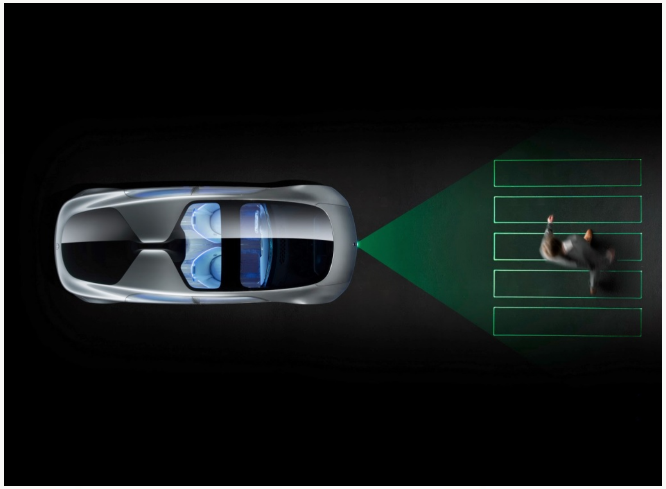
R. Goebel, A. Chander, K. Holzinger, F. Lécué, Z. Akata, S. Stumpf, P. Kieseberg, A. Holzinger: Explainable AI: The New 42? CD-MAKE 2018: 295-303

J Koo, J. Kwac, W. Ju, M. Steinert, L. Leifer, C. Nass: Why did my car just do that? Explaining semi-autonomous driving actions to improve driver understanding, trust, and performance. International Journal on Interactive Design and Manufacturing (IJIDeM)9, 4 (2015), 269–275.

T. Helldin, G. Falkman, M. Riveiro, S. Davidsson: Presenting system uncertainty in automotive UIs for supporting trust calibration in autonomous driving. In Proceedings of the 5th international conference on automotive user interfaces and interactive vehicular applications. ACM, 210–217.



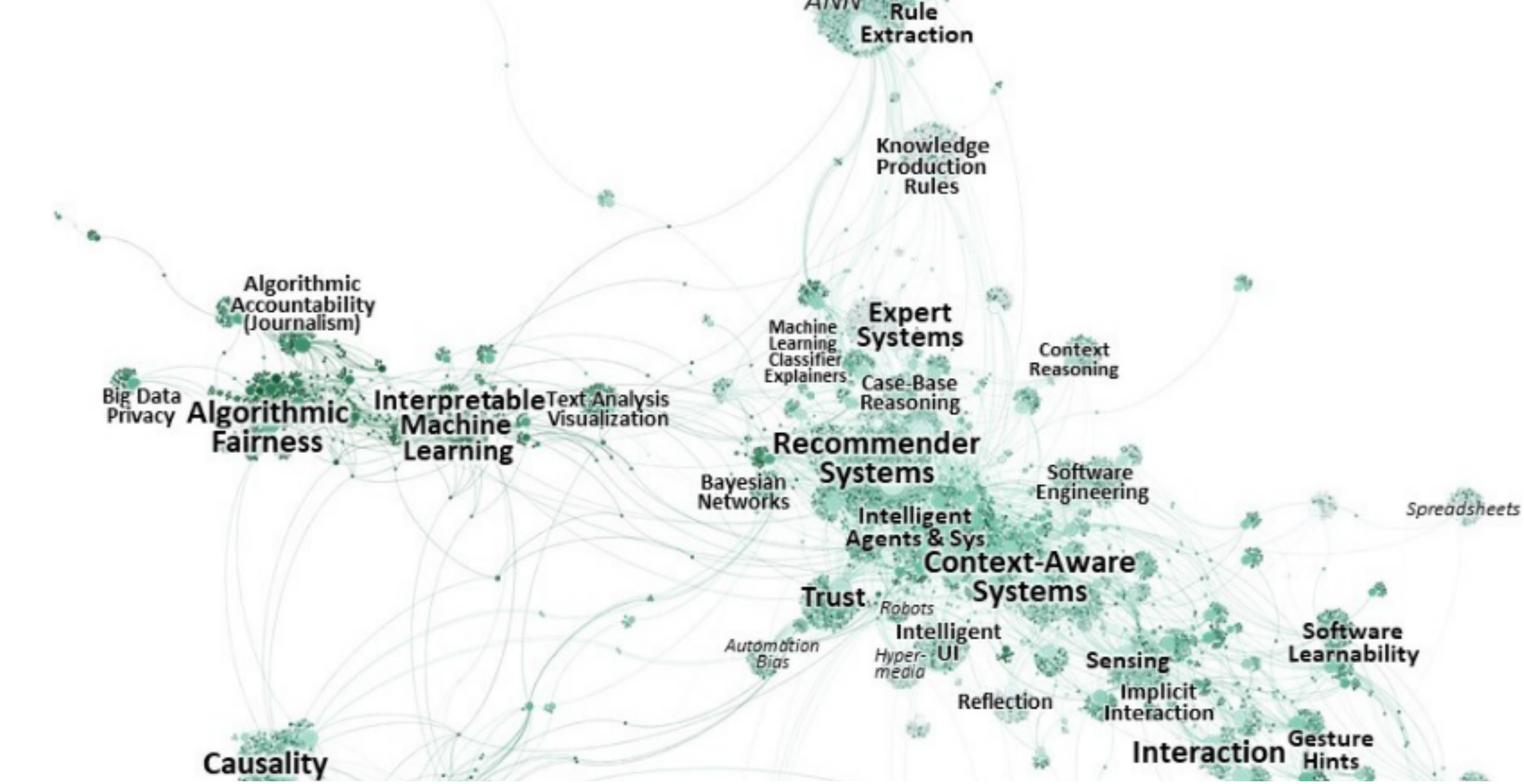
External Car Displays



- Communication between automated vehicles and other road users
- Influence of Automation on traffic

https://dl.acm.org/citation.cfm?id=3174003
https://dl.acm.org/citation.cfm?id=3122989
http://www.wendyju.com/publications/RO-MAN2016-Rothenbucher.pdf

3



Explainable and Accountable AI: Mapping the Research Landscape

How can we best support users in dealing with intelligent systems? There is a plethora of work from diverse fields trying to find answers to this question. In this project, we want to map the landscape of related work to see what these fields have in common and how they differ, what they focus on and which keywords they use.

Abdul, A., Vermeulen, J., Wang, D., Lim, B. Y., & Kankanhalli, M. (2018). Trends and Trajectories for Explainable, Accountable and Intelligible Systems: An HCI Research Agenda. *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems - CHI '18*, 1–18. http://doi.org/10.1145/3173574.3174156

4

Supervisors: Daniel Buschek and Malin Eiband

EXPLAINABLE INTELLIGENT SYSTEMS

Opportunities and Challenges of Interactive Explanations

CONTEXT

- There is a need for interfaces that allow users „to better understand underlying computational processes“ and give users “the potential to better control their actions“. (Shneiderman et al. 2016, Grand challenges for HCI researchers)
- „ML and AI communities are working on making algorithms explainable, but they are not necessarily focusing on usable, practical and effective transparency that benefits people“ (Abdul et al. 2018, CHI 2018)
- How can HCI researchers leverage interactive explanations to design interpretable machine learning-empowered systems for users?

STARTING POINTS

- Trends and Trajectories for Explainable, Accountable and Intelligible Systems
- ‘It’s Reducing a Human Being to a Percentage’: Perceptions of Justice in Algorithmic Decisions
- Why and Why Not Explanations Improve the Intelligibility of Context-Aware Intelligent Systems
- Designs for explaining intelligent agents

5

Investigating the influence of technology on co-located bystanders in collaborative settings

Ubiquitous technologies, such as mobile phones, head mounted displays (HMDs) and public displays, do not only affect the user of the technology but also people that are in close proximity (bystanders). They may be passing by (passive bystanders) or want to actively engage (active bystanders) with the user. In both cases, they are affected by the users interaction, for example by noticing the gestures they are making.
(R1) How are bystanders currently included in such a context?
(R2) How should bystanders approach the main user of the technology if they want to actively engage with them?
(R3) How does the bystanders affect the main user?

Billinghurst, Mark, and Hirokazu Kato. "Collaborative augmented reality." *Communications of the ACM*45.7 (2002): 64-70.

Love, Steve, and Mark Perry. "Dealing with mobile conversations in public places: some implications for the design of socially intrusive technologies." *CHI'04 Extended Abstracts on Human Factors in Computing Systems*. ACM, 2004.

Tang, Anthony, et al. "Designing for bystanders: reflections on building a public digital forum." *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. ACM, 2008.

6

Recommending People to People: Reciprocal Recommender Systems

Supervisor: Sarah Aragon Bartsch – sarah.aragon.bartsch@ifi.lmu.de

- Application areas, e.g. online dating, job search
- Classification of reciprocal recommenders
- Challenges and opportunities

References:

Pizzato, Luiz, et al. "RECON: a reciprocal recommender for online dating." *Proceedings of the fourth ACM conference on Recommender systems*. ACM, 2010.

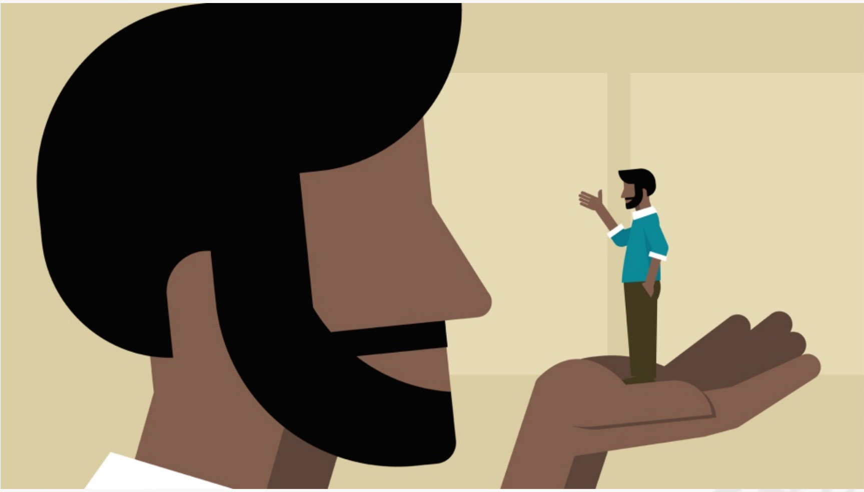
Li, Lei, and Tao Li. "MEET: a generalized framework for reciprocal recommender systems." *Proceedings of the 21st ACM international conference on Information and knowledge management*. ACM, 2012.

Akehurst, Joshua, et al. "CCR-A Content-Collaborative Reciprocal Recommender for Online Dating." *IJCAI*. 2011.

Image source: https://considertheconsumer.com/wp-content/uploads/2018/03/Bumble-Sues-Match-For-Stealing-Trade-Secrets-Consider-The-Consumer.jpg

The Role of Self-Reflection and Self-Awareness in Decision Support Systems

Supervisor: Sarah Aragon Bartsch – sarah.aragon.bartsch@ifi.lmu.de



- How can we support self-reflection and self-awareness through technology in general?
- What is the role of self-reflection in decision support systems (DSS)?
- How can DSS be designed to better support self-reflection and self-awareness?

References:

Lin, Xiaodong, et al. "Designing technology to support reflection." *Educational Technology Research and Development* 47.3 (1999): 43-62.

Mathieson, Kieran. "Towards a design science of ethical decision support." *Journal of Business Ethics* 76.3 (2007): 269-292.

Image source: https://www.lynda.com/Leadership-Management-tutorials/Developing-Self-Awareness/622054-2.html

David Englmeier

Shape displays as an opportunity for passive and active haptic feedback in virtual reality

shapeShift: A Mobile Tabletop Shape Display for Tangible and Haptic Interaction

Alexa F. Siu, Eric J. Gonzalez, Shenli Yuan, Jason Ginsberg, Allen Zhao, Sean Follmer
http://shape.stanford.edu/research/shapeShift/shapeShift-UIST-demo-2017.pdf

inFORM: Dynamic Physical Affordances and Constraints through Shape and Object Actuation

Sean Follmer, Daniel Leithinger, Alex Olwal Akimitsu Hogge Hiroshi Ishii
http://foresight.ifmo.ru/ict/shared/files/201312/1_192.pdf

A Tactile Shape Display Using RC Servomotors

Christopher R. Wagner, Christopher R. Wagner, Robert D. Howe
http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.85.7302&rep=rep1&type=pdf

Image: shapeShift: A Mobile Tabletop Shape Display for Tangible and Haptic Interaction

Estimating strength of biometric methods

Lukas Mecke

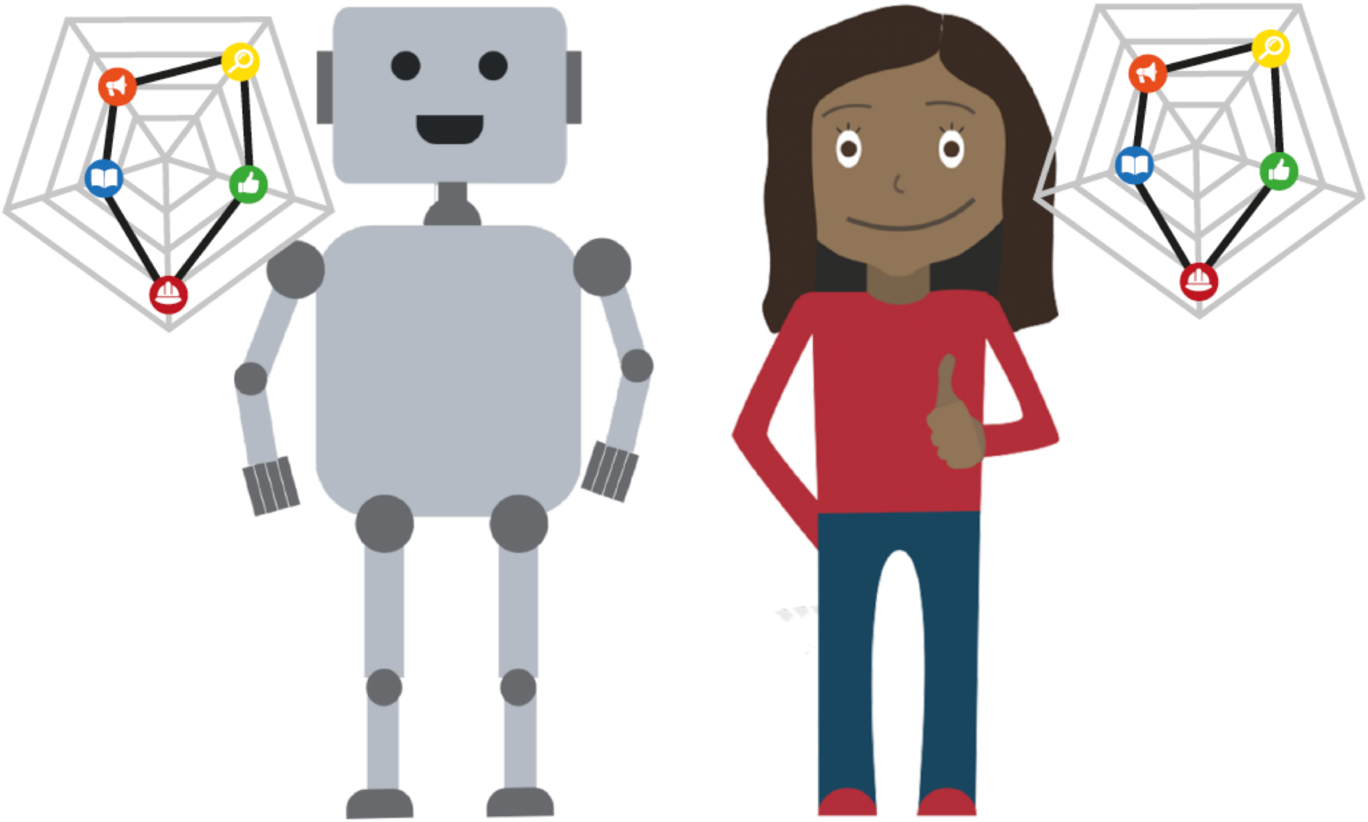
- *Physiological* biometrics (e.g. fingerprint) become more and more common nowadays, and there is also a lot of research towards using *behaviour* as biometrics (e.g. typing)
- How can we tell if particular biometric methods are *suited* for individuals or not? What are *good measures* and are there *differences* for different biometric methods?

Starting points:

- An Introduction to Biometric Recognition
- Artificial Rhythms and Cues for Keystroke Dynamics based Authentication
- Towards predicting good users for biometric recognition based on keystroke dynamics

Similarity Attraction Paradigm for Intelligent Agents

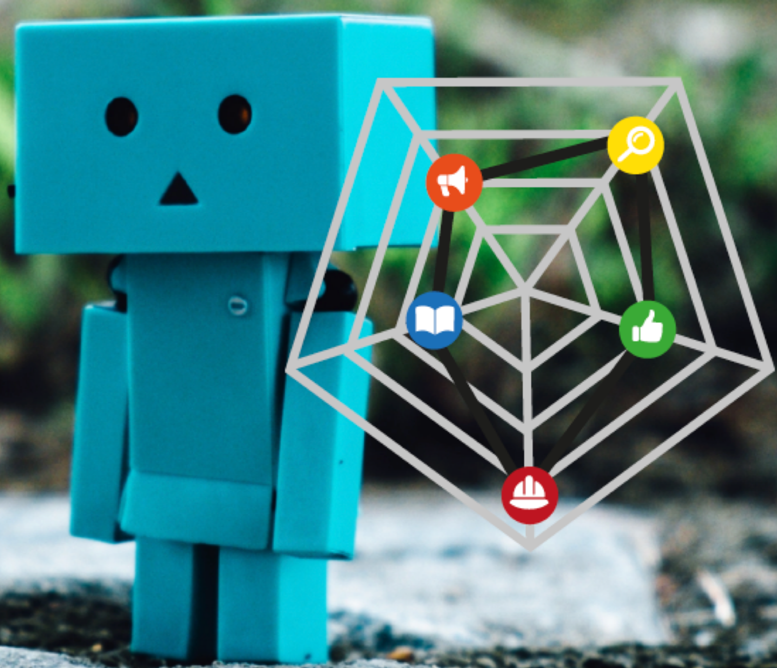
According to the Similarity Attraction Paradigm, humans prefer to interact with others who have a "similar" personality. Research in HCI suggests that the same attraction can be found for human robot interaction.



Your task:

Review existing literature on the similarity attraction paradigm for intelligent humanoid agents.

Humans automatically and consistently conceptualize the personality of each other, primarily based on observed behavior. This process of attributing personality traits is so pervasive and innate that it also extends for any interaction with virtual humanoid characters, e.g., voice assistants, robots or chatbots.



Creating Intelligent Agents with Personality

12

Your task:
Review existing literature on creating virtual intelligent agents with personality.

Sensing Learners' Attention to Support Mobile Learning

Mobile language learning app support learning independent from time and location [1]. Usage contexts can be demanding environments (e.g., public transport rides), where users are susceptible for **interruptions and distractions**. Interruptions can **decrease task performance**, increase completion time [2] and decrease the chance of information being stored in the long-term memory [3].

→ To provide learning support, we need to **sense the learners' attention**

1) **Summarize existing work** on sensing attention (not restricted to the mobile use case); (see [4, 5, 6])
2) **Evaluate the feasibility of different approaches** in the context of mobile usage; state advantages and disadvantages
3) Pick the most promising approach and **discuss** its application for mobile learning

[1] Zou, B., & Li, J. (2015). Exploring Mobile Apps for English Language Teaching and Learning. *Research-publishing. net*.
[2] Bailey, B. P., & Konstan, J. A. (2006). On the need for attention-aware systems: Measuring effects of interruption on task performance, error rate, and affective state. *Computers in human behavior*, *22*(4), 685-708.
[3] Schacter, D. L. (1999). The seven sins of memory: Insights from psychology and cognitive neuroscience. *American psychologist*, *54*(3), 182.
[4] Liu, N. H., Chiang, C. Y., & Chu, H. C. (2013). Recognizing the degree of human attention using EEG signals from mobile sensors. *Sensors*, *13*(8), 10273-10286.
[5] Lagun, D., Hsieh, C. H., Webster, D., & Navalpakkam, V. (2014, July). Towards better measurement of attention and satisfaction in mobile search. In *Proceedings of the 37th international ACM SIGIR conference on Research & development in information retrieval* (pp. 113-122). ACM.
[6] Khamis, M., Baier, A., Henze, N., Alt, F., & Bulling, A. (2018, April). Understanding Face and Eye Visibility in Front-Facing Cameras of Smartphones used in the Wild. In *Proceedings of CHI* (p. 280). ACM.

Designing Task Resumption Cues for Mobile Learning

Mobile language learning app support learning independent from time and location [1]. Usage contexts can be demanding environments (e.g., public transport rides), where users are susceptible for **interruptions and distractions**. Interruptions can **decrease task performance**, increase completion time [2] and decrease the chance of information being stored in the long-term memory [3].

→ One solution is to implement **cues to support task resumption**

1) **Summarize existing work** on cues for task resumption based on literature from related fields (see [4, 5, 6])
2) **Evaluate the feasibility of different designs** for mobile learning.
3) Adapt one promising design idea to the use case of mobile learning and **propose a design.**

[1] Zou, B., & Li, J. (2015). Exploring Mobile Apps for English Language Teaching and Learning. *Research-publishing. net*.
[2] Bailey, B. P., & Konstan, J. A. (2006). On the need for attention-aware systems: Measuring effects of interruption on task performance, error rate, and affective state. *Computers in human behavior*, *22*(4), 685-708.
[3] Schacter, D. L. (1999). The seven sins of memory: Insights from psychology and cognitive neuroscience. *American psychologist*, *54*(3), 182.
[4] Iqbal, S. T., & Horvitz, E. (2007, April). Disruption and recovery of computing tasks: field study, analysis, and directions. In *Proceedings of CHI* (pp. 677-686). ACM.
[5] Parnin, C., & DeLine, R. (2010, April). Evaluating cues for resuming interrupted programming tasks. In *Proceedings of CHI* (pp. 93-102). ACM.
[6] Mariakakis, A., Goel, M., Aumi, M. T. I., Patel, S. N., & Wobbrock, J. O. (2015, April). SwitchBack: Using focus and saccade tracking to guide users' attention for mobile task resumption. In *Proceedings of CHI* (pp. 2953-2962). ACM.

Speech Emotion Recognition in different Languages

- database:

Database	Language	Family	Symbol	# Arousal +	# Arousal -	# Valence +	# Valence -	# m	# f	kHz
Emo-DB [32]	German	Germanic	DE	248	246	352	142	5	5	20
DES [61]	Danish	Germanic	DK	104	156	156	104	2	2	20
Enterface [20]	English	Germanic	GB	215	857	427	645	34	8	16
SES [62]	Spanish	Romanic	ES	15	18	15	18	1	0	16
SRoL [18]	Romanian	Romanic	RO	154	154	154	154	11	8	22
Busim [45]	Turkish	Turkic	TR	242	242	242	242	3	8	16
Mandarin [13]	Mandarin	Sino-Tibetan	CN	60	180	120	120	3	3	22
Burmese [13]	Burmese	Sino-Tibetan	MM	69	177	108	138	3	3	22

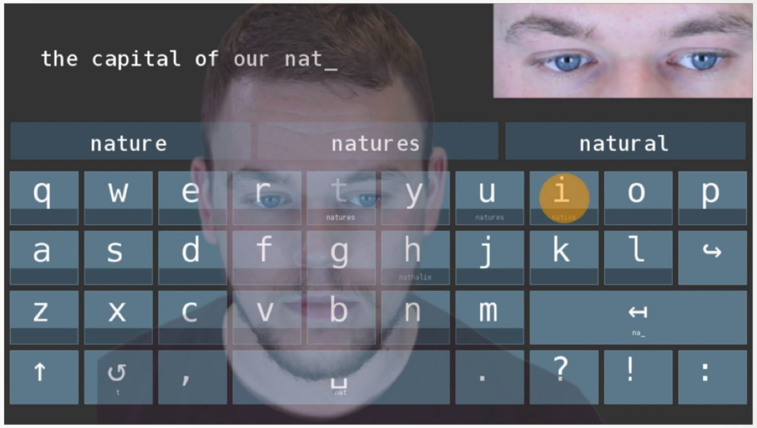
- Speech Features: Time Domain(Shor-time energy, Zero-Crossing, Correlation…) and Frequency Domain(Mel-frequency Cepstral Coefficients, Linear Prediction Cepstral Coefficients, Power-Normalized Cepstral Coefficients…)

- Machine Learning Methods: KNN(K-Nearest Neighbors Algorithm), SVM(Support Vector Algorithm), GMM(Gaussian Mixed Model method), ANN(Artificial Neural Network), CNN(Convolution Neural Network), RNN(Recurrent Neural Network)…

Gaze-based Text Entry

Yasmeen Abdrabou and Mohamed Khamis

Gaze-based text entry is now more prominent and being embedded in daily activities as well as AR and VR applications.



Related Work:

- https://dl.acm.org/citation.cfm?id=507076&fbclid=IwAR37CJvYeiWzZaW3JbxssMwpncomQuQAUUeGUGWdxWgBqOE0ERBgwv--GZM
- https://dl.acm.org/citation.cfm?id=3207413&fbclid=IwAR2YvorgWwZrqEpp6AQahD-jEyvn8-nUMkisxHnVfU1DGRpGhRs9bGBVYhA
- https://dl.acm.org/citation.cfm?id=1344476

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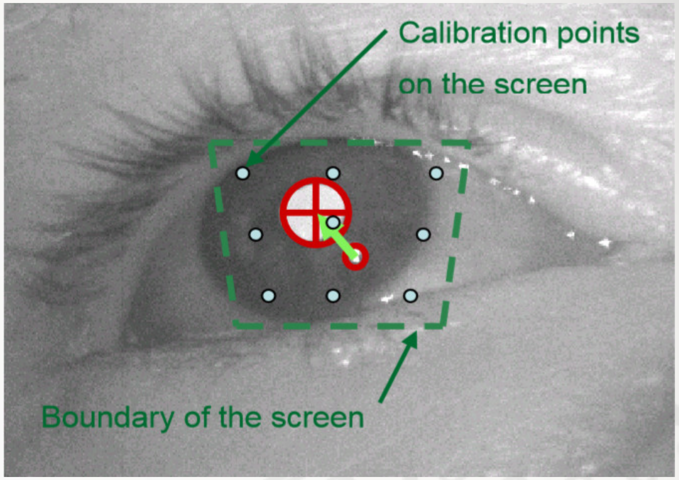
Universität der Bundeswehr München

Video-based Eye Gaze Tracking and Calibration



- Video-based eye-tracking
  How does it work?

- Accuracy and precision of commercial eye trackers
  An overview on data sheets

- Calibration methods
  Nine-point calibration, pursuit-based calibration

[1] Accuracy and precision test method for remote eye trackers https://stemedhub.org/resources/3311/download/Tobii_Test_Specifications_Accuracy_and_PrecisionTestMethod_version_2_1_1_.pdf
[2] Pfeuffer, Ken and Vidal, Melodie and Turner, Jayson and Bulling, Andreas and Gellersen, Hans Pursuit calibration: making gaze calibration less tedious and more flexible

Themen

Nummer	Titel	Betreuer	Student(en)
1	Cultural Differences for Intelligent Assistants	Michael Braun michael.bf.braun@bmw.de	Strauch, Hu
2	Building Trust through Explainability in Autonomous Driving	Gesa Wigand gesa.wiegand@ifi.lmu.de	Eska
3	External Car Displays	Kai Holländer kai.hollaender@ifi.lmu.de	Krüger
4	Explainable and Accountable AI: Mapping the Research Landscape	Dr. Daniel Buschek daniel.buschek@ifi.lmu.de	Hof
5	Explainable Intelligent Systems	Michael Chromik michael.chromik@ifi.lmu.de	Von der Au
6	Investigating the influence of technology on co-located bystanders in collaborative settings	Ceenu George ceenu.george@ifi.lmu.de	Fischer
7	Recommending People to People: Reciprocal Recommender Systems	Sarah Aragon Bartsch sarah.aragon.bartsch@ifi.lmu.de	Tea
8	The Role of Self-Reflection and Self-Awareness in Decision Support Systems	Sarah Aragon Bartsch sarah.aragon.bartsch@ifi.lmu.de	
9	Shape displays as an opportunity for passive and active haptic feedback in virtual reality	David Englmeier david.englmeier@ifi.lmu.de	Mattusch
10	Estimating strength of biometric methods	Lukas Mecke lukas.mecke@ifi.lmu.de	Keiselt

Themen

Nummer	Titel	Betreuer	Student(en)
11	Similarity Attraction Paradigm for Intelligent Agents	Sarah Theres Völkel sarah.voelkel@ifi.lmu.de	Lechner, Neumann
12	Creating Intelligent Agents with Personality	Sarah Theres Völkel sarah.voelkel@ifi.lmu.de	Haaf
13	Sensing Learners' Attention to Support Mobile Learning	Christina Schneegaß christina.schneegass@ifi.lmu.de	
14	Designing Task Resumption Cues for Mobile Learning	Christina Schneegaß christina.schneegass@ifi.lmu.de	K Fischer
15	Speech Emotion Reconigion in different Language	Yong Ma yong.ma@ifi.lmu.de	Masurek
16	Gaze-based Text Entry	Yasmeen Abdrabou yasmeen.e.mahmoud@gmail.com	Wohnhaas
17	Video-based Eye Gaze Tracking and Calibration	Dr. Heiko Drews heiko.drewes@ifi.lmu.de	Müller, Pömp

Nächste Schritte

- In Kontakt mit Betreuer treten (E-Mail)
- Related Work anschauen (Google Scholar)
- Gliederung überlegen

Catchy Titles Are Good: But Avoid Being Cute

Jacob O. Wobbrock
The Information School | DUB Group
University of Washington
Seattle, WA USA 98195
wobbrock@uw.edu

ABSTRACT
The most important rule of Abstracts is that they describe the work, not the paper. Include, at most, one sentence of motivation. Save the rest of your motivation for the Introduction. Effective Abstracts focus on two things: (1) Describing what was *done*. (2) Describing what was *found* (key results). Be specific about your key findings. Instead of "many" say "84%". Keep the Abstract to one paragraph and fewer than 200 words.

Author Keywords
Authors' choice; of terms; separated; by semicolons; commas, within terms only; this section is required.

ACM Classification Keywords
Example: H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous;

See http://acm.org/about/class/1998 for the full list of ACM classifiers. This section is required.

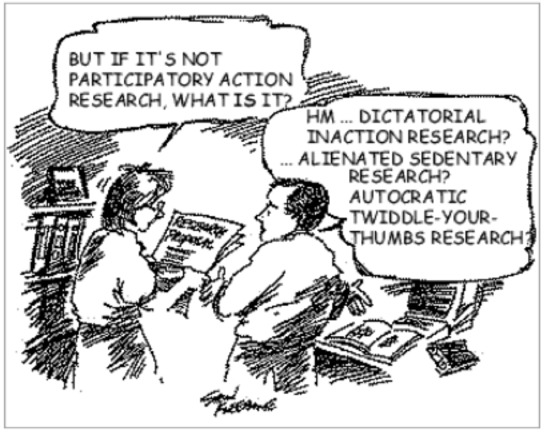


Figure 1. Choose a telling figure for your paper that is placed at the top of the right-hand column on the first page. I like to make figure