

# Advanced Seminar Media Informatics

Sarah Theres Völkel | Matthias Schmidmaier | Prof. Dr. Heinrich Hußmann  
Summer 2019

# Information

Lecturer Prof. Dr. Heinrich Hußmann

In charge Sarah Völkel [sarah.voelkel@ifi.lmu.de](mailto:sarah.voelkel@ifi.lmu.de)  
Matthias Schmidmaier [matthias.schmidmaier@ifi.lmu.de](mailto:matthias.schmidmaier@ifi.lmu.de)

What you need → master student in Media Informatics, Computer Science, HCI  
→ English skills

What you get → 2 SWS / 6 ECTS  
→ experience in scientific writing and research

Website <https://www.medien.ifi.lmu.de/lehre/ss19/hs>

# Contents

What you will do

- select / be assigned to a research topic today
- work **independently** on your topic over the next weeks
- write a **scientific paper** (6-8 pages)
- review two fellow students' papers
- give a **60s pitch** and a final **presentation** (15min talk + 5min discussion)

# Schedule (preliminary)

30.04.19	Kick-Off	session - compulsory attendance
28.05.19	1st draft paper submission	get feedback meet your supervisor before!
02.06.19	60s pitch slides submission	
04.06.19	60s pitches	session - compulsory attendance
18.06.19	Review-ready paper submission	
28.06.19	Review submission	
12.07.19	Final paper submission	get feedback meet your supervisor before!
14.07.19	1st draft slides submission	
21.07.19	Final slides submission	practice talk with your supervisor!
23.07.19	Presentation	session - compulsory attendance, about <b>~5 hours!</b>

# Scientific publishing

Why we write papers and how we spread them

Advanced Seminar Media Informatics



# Aim of scientific research

“Research is a **process of steps** used to collect and analyze **information** to **increase** our **understanding** of a topic or **issue**” (Creswell 2008)

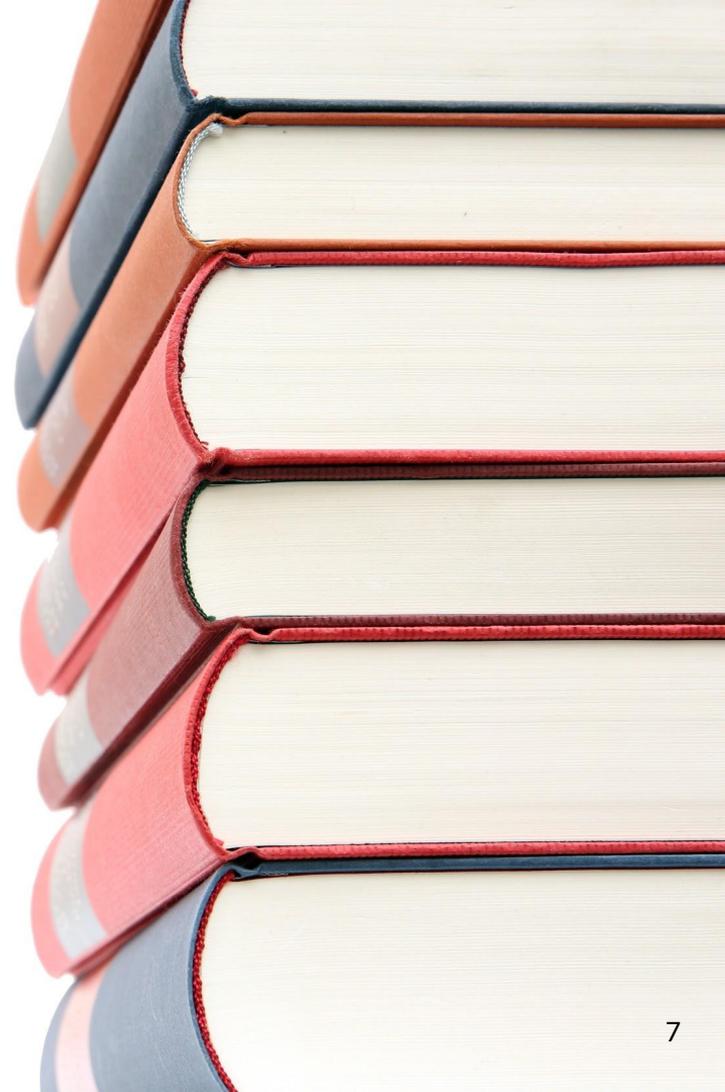
## Systematic process of steps

- Pose a **question** (research question & research gap)
- **Collect data** to answer the question
- **Present** an answer to the question



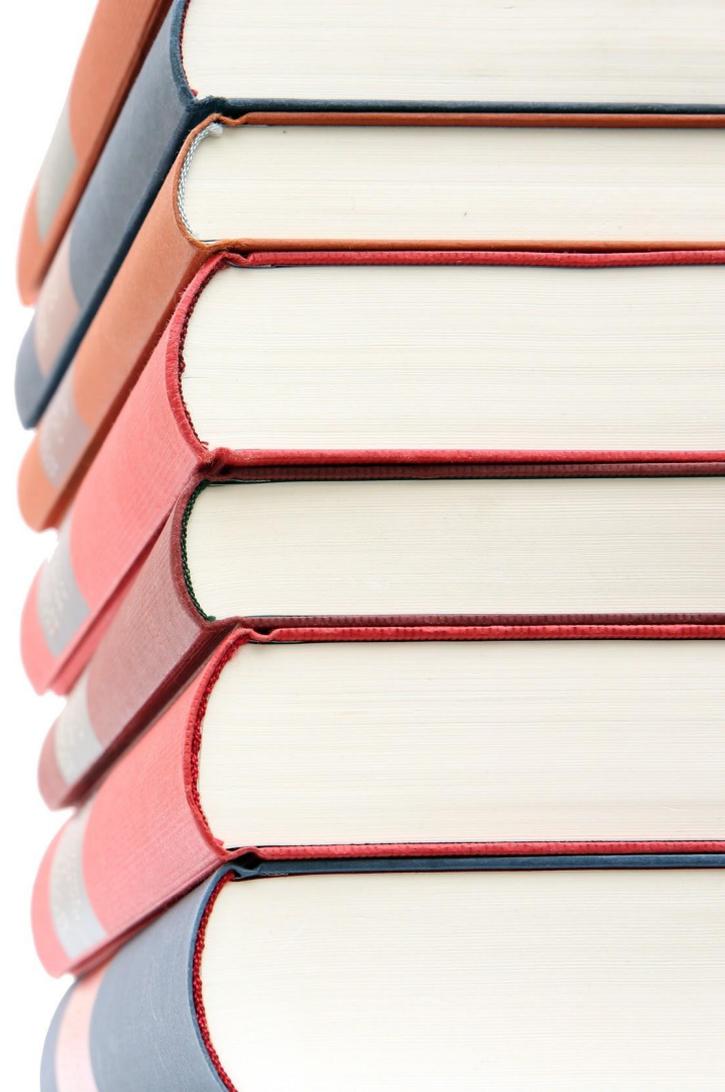
# Distributing knowledge

- Books
- Articles in journals
- Articles in conferences
- Thesis (Bachelor, Master, PhD)
- Internet sources (e.g. blogs, Wikipedia)
- Talks and lectures
- Personal communication
- Patents

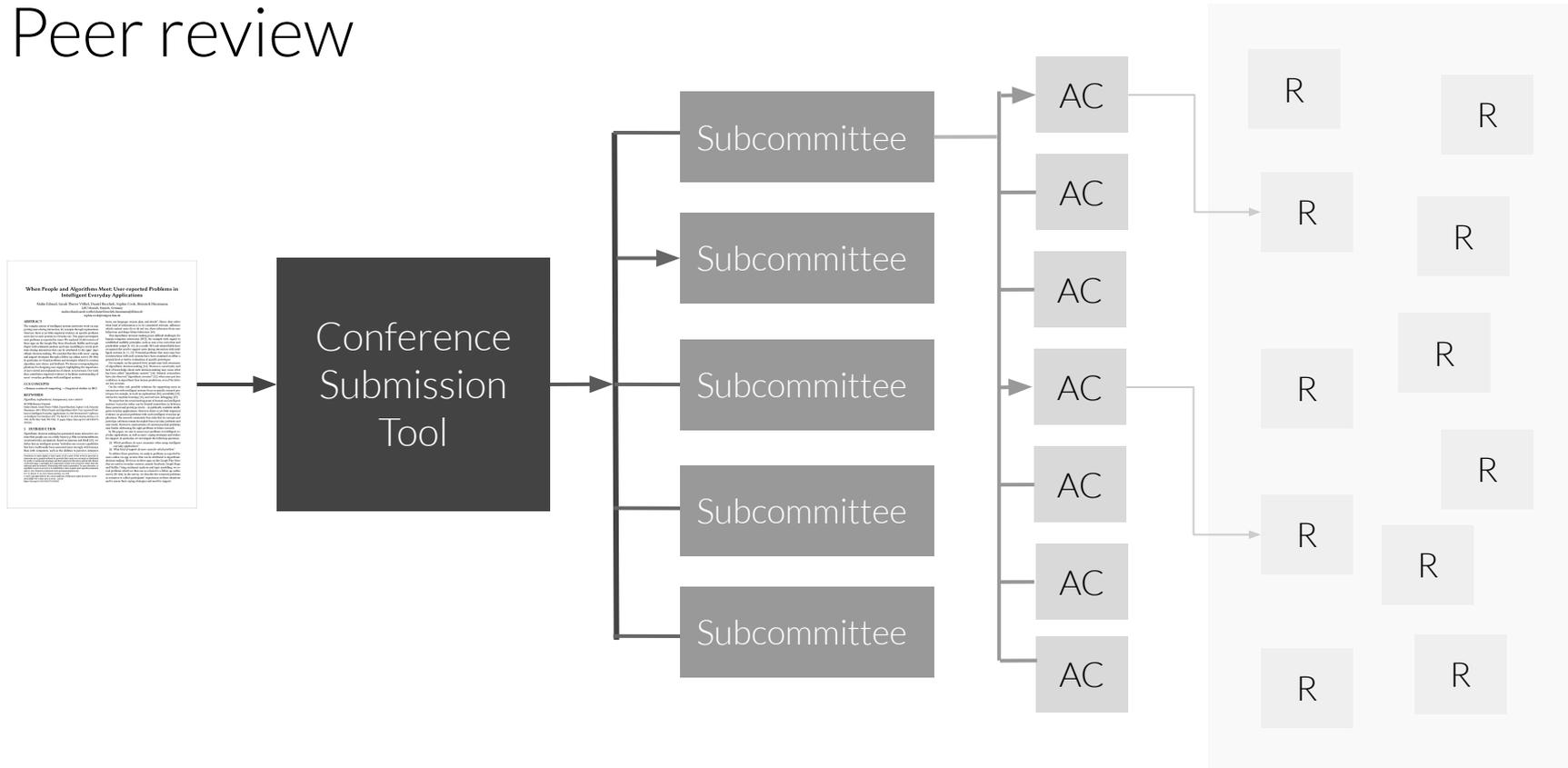


# Distributing knowledge

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# Peer review



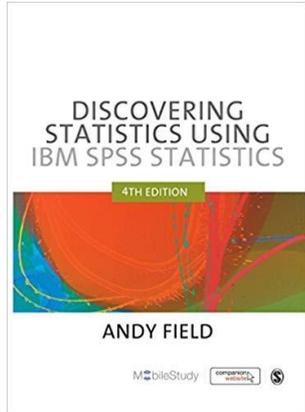
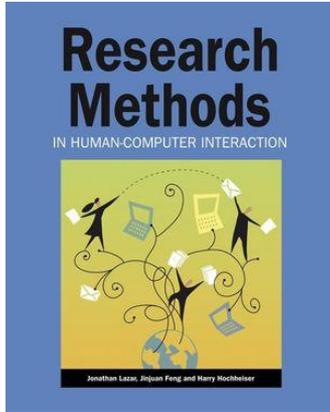


# Peer review

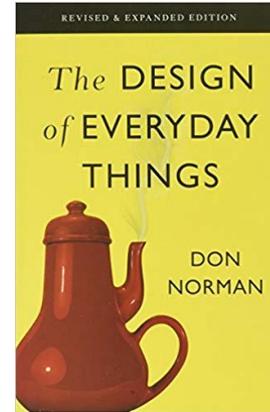
## Double Blind Peer Review



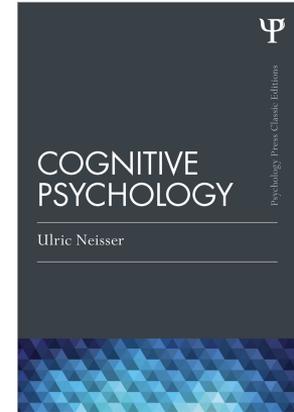
# Books in HCI



Methodology



Basic Research



# Scientific conferences in HCI

- **Human Factors in Computing Systems (CHI)**
- ACM Conference on **Computer-Supported Collaborative Work & Social Computing (CSCW)**
- ACM Conference on **Pervasive and Ubiquitous Computing (UbiComp)**
- ACM Symposium on **User Interfaces Software and Technology (UIST)**
- ACM/IEEE International Conference on **Human Robot Interaction (HRI)**
- Conference on **Designing Interactive Systems (DIS)**
- International Conference on **Multimodal Interfaces (ICMI)**
- **MobileHCI**
- International Conference on **Intelligent User Interfaces (IUI)**
- ....



# Scientific conferences in HCI (specific topics)

- IEEE Conference on **Virtual Reality and 3D User Interfaces** (IEEE VR)
- International Conference on **Tangible, Embedded and Embodied Interaction** (TEI)
- International ACM Conference on **Automotive User Interfaces** and Interactive Vehicular Applications (AutoUI)
- ACM International Symposium on **Pervasive Displays** (PerDis)
- Symposium on **Usable Privacy and Security** (SOUPS)

**IEEE VR 2019**  
**OSAKA**



# Scientific conferences in HCI





# Scientific journals in HCI

- ACM Transactions on **Computer-Human Interaction** (ToCHI)
- IEEE Transactions on **Affective Computing**
- **Behaviour & Information Technology**
- International Journal of **Human-Computer Interaction**
- ACM Transactions on **Interactive Intelligent Systems** (TiiS)
- IEEE Transactions on **Human-Machine Systems**
- ...

# How to research a topic

Search, read and organize scientific literature



# How to research a topic - Search

Search literature (papers, articles, books, ...)

- Libraries
- ACM, IEEE digital libraries
- Google Scholar, CiteSeer
- researcher's / university's website
- classic web search
- LMU OPAC

Google Scholar

ACM **DL** DIGITAL LIBRARY

IEEE  
*Xplore*<sup>®</sup>  
Digital Library

# How to research a topic - Search



Artikel Ungefähr 16.500 Ergebnisse (0,11 Sek.)

## Beliebige Zeit

Seit 2019

Seit 2018

Seit 2015

Zeitraum wählen...

## Nach Relevanz sortieren

Nach Datum sortieren

## Beliebige Sprache

Seiten auf Deutsch

- Patente einschließen
- Zitate einschließen

Alert erstellen

### Avocados crossing borders: the missing common information infrastructure for international trade

T Jensen, N Bjørn-Andersen, R Vatrapu - Proceedings of the 5th ACM ..., 2014 - dl.acm.org

... theory has been applied in multiple academic domains such as developmental psychology [13], educational psychology [14], learning sciences [15], **human-computer interaction** [16, 17], and ... A farmer located 70 km from Nairobi with ten **avocado** trees: "**Avocados** are more ...

☆ Zitiert von: 16 Ähnliche Artikel Alle 4 Versionen

[PDF] researchgate.net

### A Flexible Prototyping Tool for 3D Real-Time User-Interaction

R Blach, J Landauer, A Rösch, A Simon - Virtual Environments' 98, 1998 - Springer

... Obvious examples are **human** users, external simulation programs, hardware devices, etc ... In classical virtual reality systems the user is surrounded by **computer** generated environments ... The **Avocado** system of GMD [3] follows an approach similar to our system ...

☆ Zitiert von: 39 Ähnliche Artikel Alle 7 Versionen

[PDF] researchgate.net

### Research commentary—Digital infrastructures: The missing IS research agenda

D Tilson, K Lyytinen... - Information systems ..., 2010 - pubsonline.informs.org

... 23, No. 4. Design challenges for CPS-based service systems in industrial production and logistics. 6 December 2018 | International Journal of **Computer** Integrated Manufacturing ... 16 November 2018 | The **Computer** Games Journal, Vol ...

☆ Zitiert von: 689 Ähnliche Artikel Alle 14 Versionen

[PDF] researchgate.net

### A highly flexible virtual reality system

R Blach, J Landauer, A Rösch, A Simon - Future Generation **Computer** ..., 1998 - Elsevier

... The **Avocado** system of GMD [7] follows an approach similar to our system ... feature of the system is the user representation by a realistic virtual **human** called VirtualAnthropos ... the assembly process,

[PDF] researchgate.net

define keywords

# How to research a topic - Search

The screenshot shows a Google Scholar search interface. The search bar contains the text "avocados \"human computer interaction\"". Below the search bar, there are three search results. Each result includes a title, authors, a brief abstract, and citation information. Annotations are present: a green box labeled "refine keywords" points to the search bar; a green box labeled "limit publication date" points to the left sidebar; and a green box labeled "# citations (click to search within citations)" points to the citation count in the third result.

**Google Scholar** avocados "human computer interaction"

**Artikel** Ungefähr 272 Ergebnisse (0,03 Sek.)

**Beliebige Zeit**  
Seit 2019  
Seit 2018  
Seit 2015  
Zeitraum wählen...

**Nach Relevanz sortieren**  
Nach Datum sortieren

**Beliebige Sprache**  
Seiten auf Deutsch

Patente einschließen  
 Zitate einschließen

**Avocados crossing borders: the missing common information infrastructure for international trade** [\[PDF\] researchgate.net](#)  
T Jensen, N Bjørn-Andersen, R Vatrapu - Proceedings of the 5th ACM ..., 2014 - dl.acm.org  
... theory has been applied in multiple academic domains such as developmental psychology [13], educational psychology [14], learning sciences [15], **human-computer interaction** [16, 17], and ...  
A farmer located 70 km from Nairobi with ten **avocado** trees: "**Avocados** are more ...  
☆ Zitiert von: 16 Ähnliche Artikel Alle 4 Versionen

**A Flexible Prototyping Tool for 3D Real-Time User-Interaction** [\[PDF\] researchgate.net](#)  
R Blach, J Landauer, A Rösch, A Simon - Virtual Environments' 98, 1998 - Springer  
... CAD systems. We see the main purpose of VR-technology in the enhancement of **human computer interaction**. Especially in problem ... processors are available. The **Avocado** system of GMD [3] follows an approach similar to our system. It is ...  
☆ Zitiert von: 39 Ähnliche Artikel Alle 7 Versionen

**Research commentary—Digital infrastructures: The missing IS research agenda** [\[PDF\] researchgate.net](#)  
D Tilson, K Lyytinen... - Information systems ..., 2010 - pubsonline.informs.org  
☆ Zitiert von: 689 Ähnliche Artikel Alle 14 Versionen

**... flexible virtual reality system**  
J Landauer, A Rösch, A Simon - Future Generation Computer ..., 1998 - Elsevier  
... These techniques serve one main purpose: the enhancement of **human computer interaction**. Espe ... 178 169 if more processors are available. The **Avocado** system of GMD [7] follows an approach similar to our sys- tem. It ...  
☆ Zitiert von: 89 Ähnliche Artikel Alle 9 Versionen

limit publication date

# citations (click to search within citations)

# How to research a topic - Search

Google Scholar avocados "human computer interaction"

Artikel

Ungefähr 104 Ergebnisse (0,04 Sek.)

- Beliebige Zeit
- Seit 2019
- Seit 2018
- Seit 2015
- Zeitraum wählen...

Nach Relevanz sortieren

Beliebige Sprache

- Patente einschließen
- Zitate einschließen
- Alert erstellen

advanced search

Avocados crossing borders: The problem of runaway objects and the solution of a shipping information pipe PDF researchgate.net

T Jensen, R Vatrapu... - Information psychology (Wertsch, 1985), ed sciences (Greeno, 1998), human-activity system performs an activity

Zitiert von: 7 Ähnliche Artikel

Development of an Interaction and Prevent Overweight and DM Sepúlveda, C Delgado, L Alvar... International Conference on Human Posters' Extended Abstracts pp 28 It is better to eat some eggs, toast

Using Activity Theory Success Theory's Key Challenges to F Wiser, C Durst... of the 52nd ... 2019 - scholarspace.manoa.hawaii.edu

Erweiterte Suche

**Artikel finden**

mit **allen** Wörtern

mit der **genauen Wortgruppe**

mit **irgendeinem** der Wörter

**ohne** die Wörter

die meine Wörter enthalten

irgendwo im Artikel

im Titel des Artikels

Artikel zurückgeben, die von folgendem Autor **verfasst** wurden:

z. B. "Stephen Hawking" oder Hawking

Artikel zurückgeben, die hier **veröffentlicht** wurden:

z. B. NJW oder Nature

Artikel zurückgeben, die in folgendem **Zeitraum** geschrieben wurden:  —

z.B. 1996

focus on specific conference

ssex.ac.uk

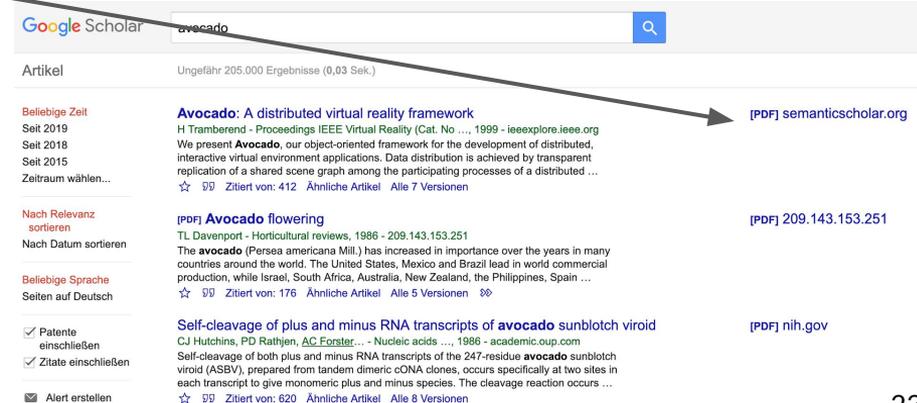
waii.edu

# How to research a topic - Get a paper

Publications are usually not freely available (especially on ACM, IEEE).

Therefore try:

1. ACM, IEEE, ... from within university network (LMU has subscriptions)
2. Use LMU University Library: OPAC (Online catalogue)
3. Google Scholar [PDF] link
4. ResearchGate: [www.researchgate.net](http://www.researchgate.net)
5. author's website, <https://arxiv.org>, ...
6. ask people with access to ACM etc.
7. polite email to author



The screenshot shows a Google Scholar search for 'avocado'. The search bar at the top contains the word 'avocado' and a search icon. Below the search bar, it indicates 'Ungefähr 205.000 Ergebnisse (0,03 Sek.)'. The results are listed in a table-like format with filters on the left. The first result is 'Avocado: A distributed virtual reality framework' by H Tramberend, published in 'Proceedings - IEEE Virtual Reality (Cat. No. ...)' in 1999. It has 412 citations and a PDF link to 'semanticscholar.org'. The second result is 'Avocado flowering' by TL Davenport, published in 'Horticultural reviews' in 1986. It has 176 citations and a PDF link to '209.143.153.251'. The third result is 'Self-cleavage of plus and minus RNA transcripts of avocado sunblotch viroid' by CJ Hutchins, PD Rathjen, and AC Forster, published in 'Nucleic acids ...' in 1986. It has 620 citations and a PDF link to 'nih.gov'. The left sidebar contains filters for 'Beliebige Zeit' (with options for 'Seit 2019', 'Seit 2018', 'Seit 2015', and 'Zeitraum wählen...'), 'Nach Relevanz sortieren', 'Nach Datum sortieren', 'Beliebige Sprache' (with 'Seiten auf Deutsch'), and checkboxes for 'Patente einschließen', 'Zitate einschließen', and 'Alert erstellen'.

# How to research a topic - Read

Read in multiple steps

1. skim over abstract and images → worth reading?
2. read complete → get it
3. read en detail → detailed understanding

While reading

- **take notes**
- mark text passages
- what were they doing? how? why? results?

Finally

- see referenced papers



# How to research a topic - Literature management

## Tools

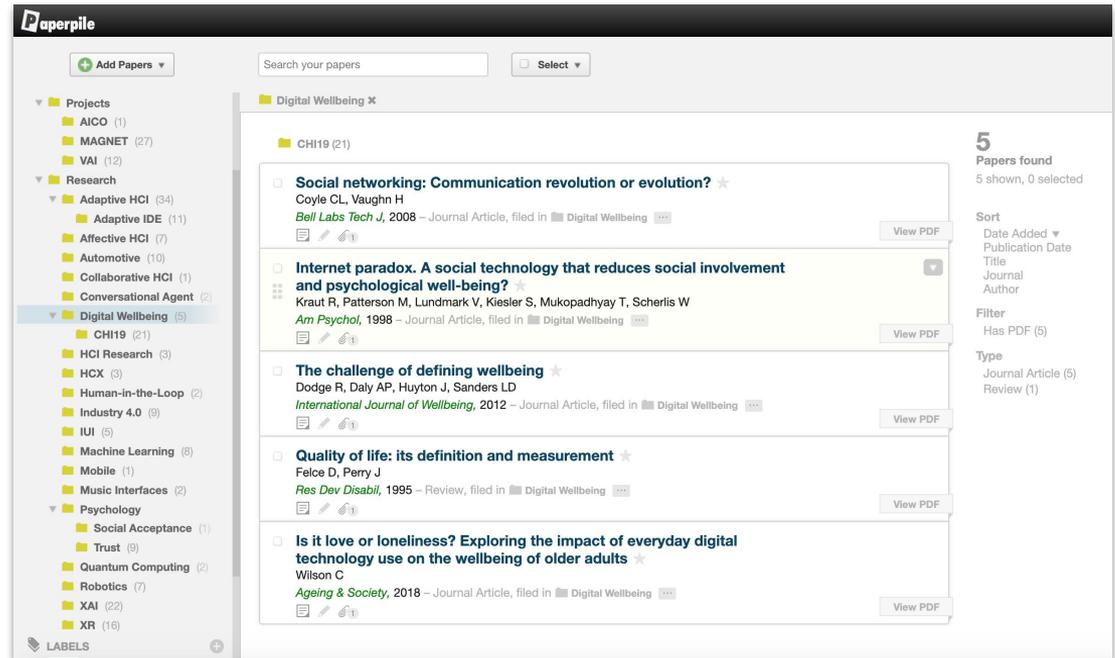
→ JabRef, Zotero, Mendeley, Paperpile, ...

## Why?

→ search and retrieve

→ labeling ('nice', 'bullshit', ...)

→ notes, citations, ...



The screenshot shows the Paperpile web interface. On the left is a sidebar with a tree view of projects and labels. The 'Digital Wellbeing' label is selected, showing 5 papers. The main area displays a list of these papers with their titles, authors, and publication details. Each entry has a 'View PDF' button. On the right, there is a summary of the search results, including the number of papers found and sorting options.

**Paperpile**

Search your papers [input] [Select]

**Digital Wellbeing** ✕

- CHI19 (21)
- Social networking: Communication revolution or evolution?** ★  
Coyle CL, Vaughn H  
*Bell Labs Tech J*, 2008 – Journal Article, filed in Digital Wellbeing [tags]  
[icon] [icon] [icon] [icon] [View PDF]
- Internet paradox. A social technology that reduces social involvement and psychological well-being?** ★  
Kraut R, Patterson M, Lundmark V, Kiesler S, Mukopadhyay T, Scherlis W  
*Am Psychol*, 1998 – Journal Article, filed in Digital Wellbeing [tags]  
[icon] [icon] [icon] [icon] [View PDF]
- The challenge of defining wellbeing** ★  
Dodge R, Daly AP, Huyton J, Sanders LD  
*International Journal of Wellbeing*, 2012 – Journal Article, filed in Digital Wellbeing [tags]  
[icon] [icon] [icon] [icon] [View PDF]
- Quality of life: its definition and measurement** ★  
Felce D, Perry J  
*Res Dev Disabil*, 1995 – Review, filed in Digital Wellbeing [tags]  
[icon] [icon] [icon] [icon] [View PDF]
- Is it love or loneliness? Exploring the impact of everyday digital technology use on the wellbeing of older adults** ★  
Wilson C  
*Ageing & Society*, 2018 – Journal Article, filed in Digital Wellbeing [tags]  
[icon] [icon] [icon] [icon] [View PDF]

**5** Papers found  
5 shown, 0 selected

Sort  
Date Added ▾  
Publication Date  
Title  
Journal  
Author

Filter  
Has PDF (5)

Type  
Journal Article (5)  
Review (1)

**Projects**

- AICO (1)
- MAGNET (27)
- VAI (12)

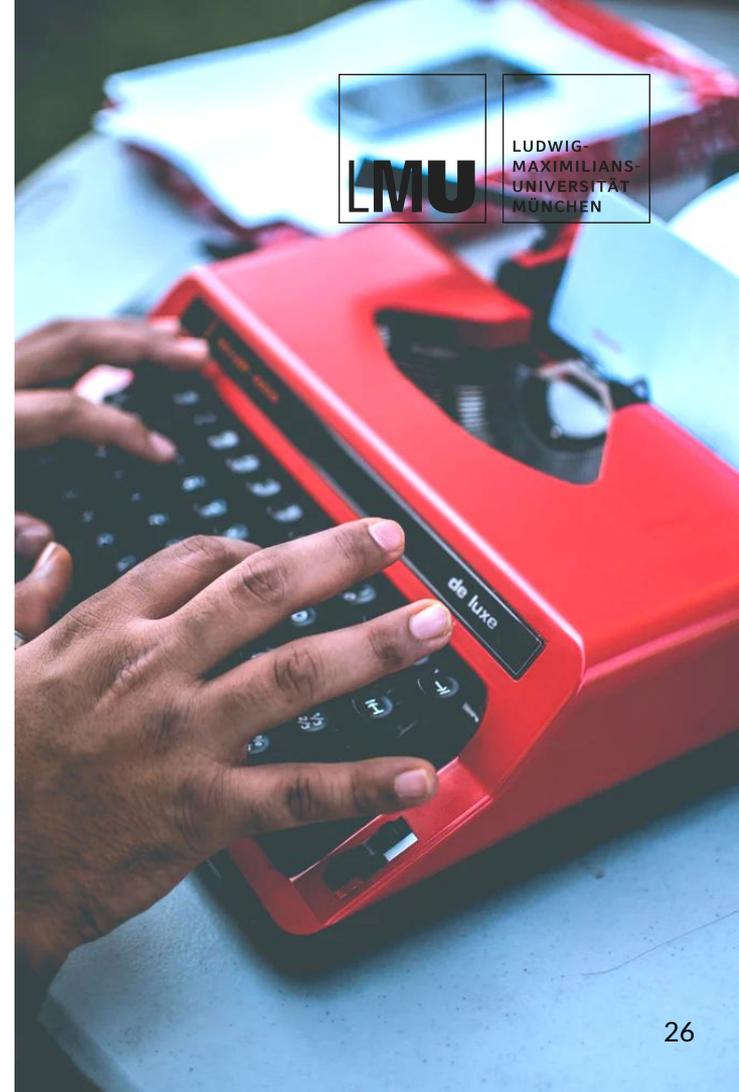
**Research**

- Adaptive HCI (34)
  - Adaptive IDE (11)
  - Affective HCI (7)
  - Automotive (10)
  - Collaborative HCI (1)
  - Conversational Agent (2)
- Digital Wellbeing (5)**
  - CHI19 (21)
  - HCI Research (3)
  - HCX (3)
  - Human-in-the-Loop (2)
  - Industry 4.0 (9)
  - IUI (5)
  - Machine Learning (8)
  - Mobile (1)
  - Music Interfaces (2)
- Psychology
  - Social Acceptance (1)
  - Trust (9)
  - Quantum Computing (2)
  - Robotics (7)
  - XAI (22)
  - XR (16)

LABELS

# How to write a paper

About storylines, citations and Tex



# How to write a paper - Story

## **Classic** paper

- what problem did you solve?
- why and how?

vs.

## **Survey** (in this seminar)

- introduce research topic
- state of the art

Logical structure

### Abstract

Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet.

### Introduction

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### Main part

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### Conclusion

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# How to write a paper - Example structure

Short, appealing **summary** of this paper.

Context and **aims** in the research field.  
Structure and approach of this paper.

Historical development.  
**Definitions, terminology, background.**  
Different **approaches** (strengths, weaknesses, ...).  
(Own) **categorization.**  
**Discussion:** problems, unsolved challenges.

**Conclusion,** outro.  
Future **outlook**

## Abstract

Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet.

## Introduction

Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet.

## Main part

Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet.

## Conclusion

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# How to write a paper - Style

## **Consider**

- logical structure
- clear and neutral language
- correct grammar, no typos
- short and simple sentences
- introduce abbreviations (e.g. 'Virtual Reality (VR)')
- use active voice (e.g. 'we conducted a literature survey' / 'authors et al. found out...')



# How to write a paper - Style

## Avoid

- fuzzy descriptions (e.g. 'high', 'low', 'almost')
- empty phrases (e.g. 'Based on these and various other findings...')
- fill words (e.g. 'indeed', 'remarkably')
- tautologies (e.g. 'LCD Display' = 'Liquid Crystal Display Display')
- pseudo-arguments (e.g. 'of course', 'as expected', 'without doubt')
- unverifiable / overclaims (e.g. 'This is the best seminar ever!')
- passive voice (e.g. 'This work was conducted by Authors et al.')
- long complex sentences (e.g. 'First they did this, then they this, this led to this, and I...')
- tempus changes (e.g. 'they find out [...], they did this.')



# How to write a paper - Style



## Avoid

- fuzzy descriptions (e.g. 'high', 'low', 'almost')
- empty phrases (e.g. 'Based on these and various other findings...')
- fill words (e.g. 'indeed', 'remarkably')
- tautologies (e.g. 'LCD Display' = 'Liquid Crystal Display')
- pseudo-arguments (e.g. 'of course', 'as expected')
- unverifiable / overclaims (e.g. 'This is the first...')
- passive voice (e.g. 'This work was conducted...')
- long complex sentences (e.g. 'First they... then they...')
- tempus changes (e.g. 'they find out [...], then they...')

**But don't be boring!**

Table 1. Top-10 list of recommendations for writing consistently boring publications.

- Avoid focus
- Avoid originality and personality
- Write l o n g contributions
- Remove implications and speculations
- Leave out illustrations
- Omit necessary steps of reasoning
- Use many abbreviations and terms
- Suppress humor and flowery language
- Degrade biology to statistics
- Quote numerous papers for trivial statements

# How to write a paper - Citations



## Plagiarism

- any reuse of text has to be clearly marked (direct / indirect citations)
- plagiarism counts as attempt to deceive, resulting in failure of class

<https://www.medien.ifl.lmu.de/lehre/Plagiate-lfl.pdf>

# How to write a paper - Citations

## Sources

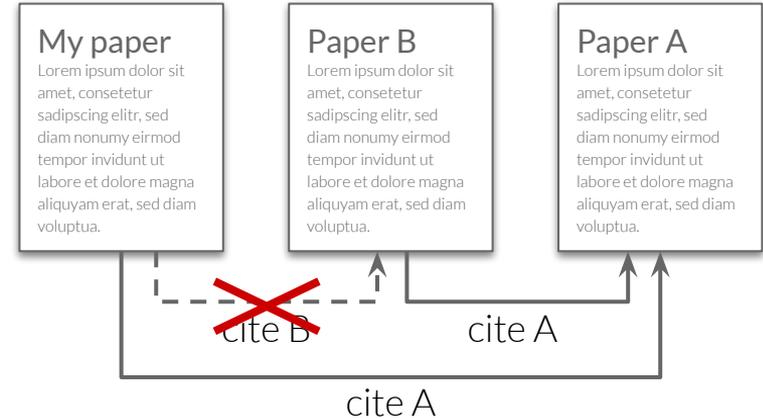
→ always reference the primary source

## Indirect

- Lorem ipsum dolor sit amet [1].
- Authors et al. [2] found out that [...]
- put references *always* before the dot [2].
- multiple sources: [1, 2, 3]

## Direct

- only use direct quotes sparsely, e.g. for definitions
- use correct English quotation marks for direct quotes: “This is a direct quote” [5].



# How to write a paper - Requirements

→ ACM Conference Proceedings Format

→ 6-8 pages incl. references, 2 columns

→ English

→ abstract ~150 words

→ add illustrations

(no picture book, no wall-of-text)

The screenshot displays a LaTeX Beamer presentation template for an ACM paper. The title is "The Name of the Title is Hope". The authors listed are Ben Trowat\*, Lars Thuváld, Valerie Béranger, G.K.M. Tobin\*, The Thuváld Group, Hella, Iceland, larst@affiliation.org, Aparna Patel, Huifen Chan, Raju Ganthi University, Tinghua University, Dimaikh, Arunachal Pradesh, India, Haidan Qu, Beijing Shi, Chi, John Smith, and Juli. Below the author information is a photograph of a baseball game, identified as "Figure 1: Seattle Mariners at Spring Training". The abstract section follows, discussing the ACM Computing Classification System and the CCS Concepts. The paper includes sections for INTRODUCTION, REFERENCES, and FIGURES. The FIGURES section shows a table with mathematical symbols and a plot of a function.

**The Name of the Title is Hope**

Ben Trowat\*  
G.K.M. Tobin\*  
trowat@corporation.com  
webmaster@marysville-obio.com  
Institute for Clarity in Documentation  
Dublin, Ohio

Lars Thuváld  
The Thuváld Group  
Hella, Iceland  
larst@affiliation.org

Valerie Béranger  
Inria Paris-Occitanomet

Aparna Patel  
Raju Ganthi University  
Dimaikh, Arunachal Pradesh, India

Huifen Chan  
Tinghua University  
Haidan Qu, Beijing Shi, Chi

John Smith  
The Thuváld Group  
jsmith@affiliation.org

Juli

**Figure 1: Seattle Mariners at Spring Training**

**ABSTRACT**  
A slide and well-documented BIPX document is presented as an article prepared for publication by ACM in a conference proceeding or journal publication. Based on the "author" document class, this article presents and explains many of the common variations, as well as many of the formatting elements an author may use in the preparation of the documentation of their work.

**CCS CONCEPTS**  
• Computer systems organization → Embedded systems: Reliability; Robotics; • Networks → Network reliability.

**1 INTRODUCTION**  
ACM's core a consistent computer entry for BIPX-specific features including your valuable insight and template.

**2 REFERENCES**  
The "booktabs" document class includes the "booktabs" package — `import{clean,org,pkg}booktabs` — for preparing high-quality tables. Table captions are placed above the table. Because tables cannot be split across pages, the best placement for them is typically the top of the page nearest their initial cell. To ensure this proper "floating" placement of tables, use the environment `table` to enclose the table's contents and the `caption` command. The contents of the table itself must go in the `tbl_struct` environment, to be aligned properly in rows and columns, with the desired horizontal and vertical rules. Again, detailed instructions on tabular material are found in the `BIPX User's Guide`. Immediately following this sentence is the point at which Table 1 is included in the input file; compare the placement of the table here with the table in the printed output of this document.

**3 FIGURES**  
To set a wide table, which takes up the whole width of the page's live area, use the environment `table*` to enclose the table's contents and the table caption, as with a single-column table, this wide table will "float" to a location deemed more desirable. Immediately

Woodstock '18, June 03–05, 2018, Woodstock, NY

**Table 1: Frequency of Special Characters**

Non-English or Math	Frequency	Comments
$\varnothing$	1 in 1000	For Swedish names
$\epsilon$	1 in 5	Common in math
$\$$	4 in 5	Used in business
$\varphi?$	1 in 40,000	Unexplained usage

following this sentence is the point at which Table 2 is included in the input file; again, it is instructive to compare the placement of the table here with the table in the printed output of this document.

**11 MATH EQUATIONS**  
You may want to display math equations in three distinct styles: inline, numbered or non-numbered display. Each of the three are discussed in the next sections.

**11.1 Inline (In-text) Equations**  
A formula that appears in the running text is called an inline or in-text formula. It is produced by the `math` environment, which can be invoked with the usual `\begin{...} ... \end{...}` construction or with the shorter `\( ... \)`. You can use any set of the symbols and structures, from  $\sigma$  to  $\omega$ , available in BIPX [20]; this section will simply show a few examples of in-text equations in context. Notice how this equation `\lim_{x \rightarrow \infty} x = \infty`, set here in an in-line math style, looks slightly different from `\displaystyle x = \infty` (see next section).

**11.2 Display Equations**  
A numbered display equation — one off by vertical space from the text and centered horizontally — is produced by the `equation` environment. An unnumbered display equation is produced by the `displaymath` environment. Again, in either environment, you can use any of the symbols and structures available in BIPX; this section will just give a couple of examples of display equations in context. First, consider the equation, shown as an inline equation above:

$$\lim_{x \rightarrow \infty} x = \infty \quad (1)$$

Notice how it is formatted somewhat differently in the `displaymath` environment. Now, we'll enter an unnumbered equation:

$$\sum_{i=1}^n x_i = 1$$

and follow it with another numbered equation:

$$\sum_{i=1}^n x_i = \int_0^{\infty} f(x) dx \quad (2)$$

Just to demonstrate BIPX's table handling of numbering.

**12 FIGURES**  
The "figure" environment should be used for figures. One or more images can be placed within a figure. If your figure contains thirty-three material, you must clearly identify it as such, as shown in the example below.

# How to write a paper - Tools

ACM Conference Proceedings LaTeX template (incl. Overleaf integration)

→ <https://www.acm.org/publications/proceedings-template>

→ Open template directly in Overleaf



The screenshot displays the Overleaf web interface for the ACM Conference Proceedings LaTeX template. On the left, there's a navigation menu with options like 'Features & Benefits', 'Templates', 'Help', and 'Projects'. Below this, the title 'ACM Conference Proceedings - New Master Template' is shown with buttons for 'Open as Template', 'View Source', and 'Download PDF'. The main area is divided into three panes: a file browser on the left listing files like 'ACM-Reference-Format.bib', 'acmart.cris', and 'README'; a source code editor in the center showing LaTeX code for document classes and commands; and a preview window on the right showing the rendered document. The preview window includes the title 'The Name of the Title is Hope', author names like 'Ben Tronzo' and 'Lars Thorsvold', and an abstract section.

# How to write a paper - Formatting

Best practice (which we expect)

- add text after section headings
- having section x.1 requires at least a section x.2
- section headings should not exceed one line
- avoid footnotes
- use `/input{ }` to distribute text to multiple .tex files
- reference `/cite{ }` literature in the bibliography
- reference `/ref{ }` figures and tables

## 2 TEMPLATE OVERVIEW

As noted in the introduction, the “acmart” document class can be used to prepare many different kinds of documentation — a double-blind initial submission of a full-length technical paper, a two-page SIGGRAPH Emerging Technologies abstract, a “camera-ready” journal article, a SIGCHI Extended Abstract, and more — all by selecting the appropriate *template style* and *template parameters*.

### 2.1 Template Styles

The primary parameter given to the “acmart” document class is the *template style* which corresponds to the kind of publication or SIG publishing the work. This parameter is enclosed in square brackets and is a part of the `documentclass` command:

```
\documentclass[STYLE]{acmart}
```

### 2.2 Template Parameters

In addition to specifying the *template style* to be used in formatting your work, there are a number of *template parameters* which modify some part of the applied template style. A complete list of these parameters can be found in the *LaTeX User's Guide*.

Frequently-used parameters, or combinations of parameters, include:

- `anonymous, review`: Suitable for a “double-blind” conference

# How to write a paper - Submissions

Final paper

→ LaTeX sources (.zip)

→ .pdf file

Presentation slides

→ .pdf file

Upload via **Uniworx**

*Watch the deadlines!*

# Topic Assignment

Choose wisely

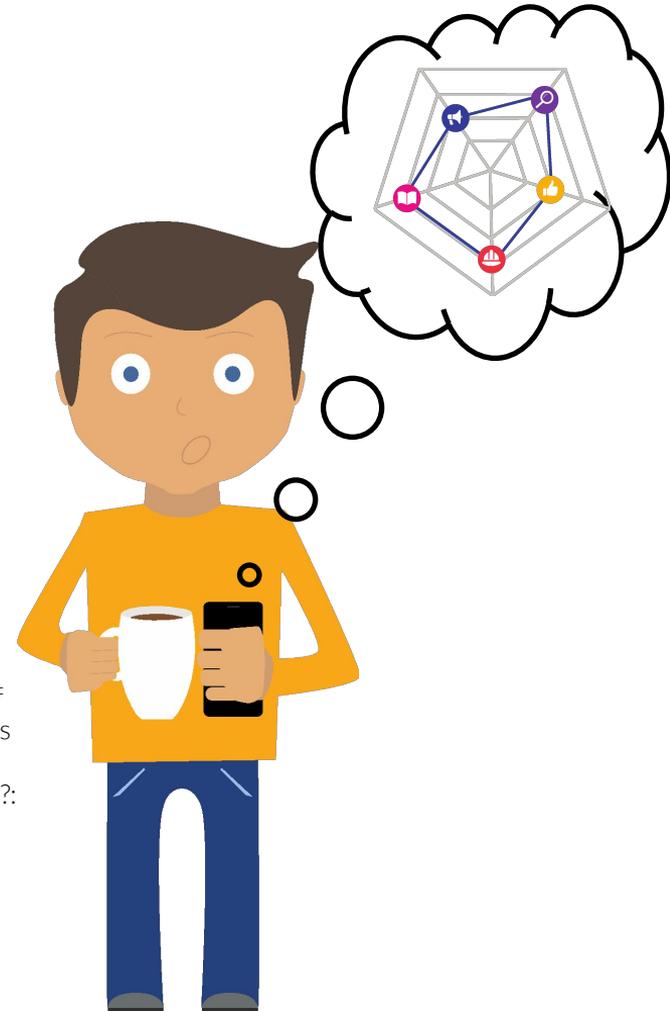


## Attitudes Towards Personality-based Personalisation

- A growing body of research shows that **personality traits can be automatically inferred** from users' digital texts.
- For example, these systems are used for personalised advertisements or job interview chatbots
- These systems are extremely powerful as **Cambridge Analytica** has shown
- How much **do users already know** about personality-based personalisation?
- What is **user's attitude** towards personality-based personalization?

[1] Zhou, Michelle X., et al. "Trusting Virtual Agents: The Effect of Personality." ACM Transactions on Interactive Intelligent Systems (TiiS) 9.2-3 (2019): 10.

[2] Warshaw, Jeffrey, et al. "Can an Algorithm Know the Real You?: Understanding People's Reactions to Hyper-personal Analytics Systems." Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems. ACM, 2015.



# Pedestrian & Automated Vehicle Interaction

An investigation of concepts for Pedestrian & Automated Vehicle interaction.

A focus is put on the interaction between multiple pedestrians and multiple vehicles.



[1] Ackermann; An experimental study to investigate design and assessment criteria: What is important for communication between pedestrians and automated vehicles?

<https://www.sciencedirect.com/science/article/pii/S0003687018306124>

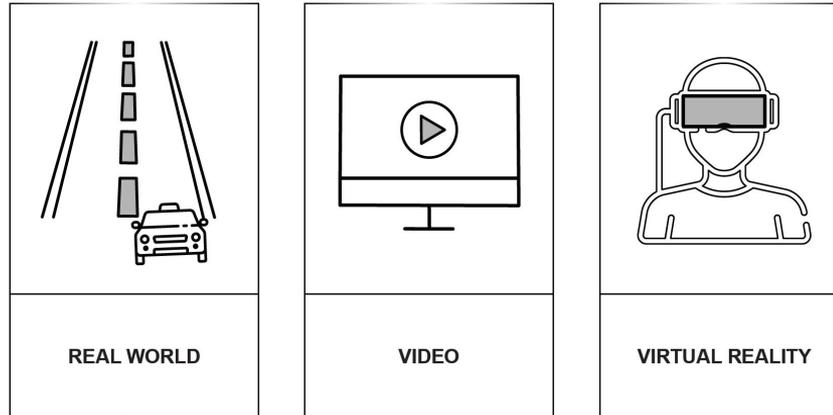
[2] Langström, Lundgren; AVIP -Autonomous vehicles' interaction with pedestrians

[http://www.tekniskdesign.se/download/AVIP\\_MasterThesis\\_Lagstrom\\_MalmstenLundgren.pdf](http://www.tekniskdesign.se/download/AVIP_MasterThesis_Lagstrom_MalmstenLundgren.pdf)

# A Comparison of Study Modalities

A comparison of **Real-World**, **Video** and **Virtual Reality** studies in the context of pedestrian-vehicle interaction and beyond.

- What are the differences?
- What are drawbacks / advantages?
- How do results differ?
- For which types of research questions is which methodology best suited?



[1] Bhagavathula, Williams, Owens; The Reality of Virtual Reality: A Comparison of Pedestrian Behavior in Real and Virtual Environments; <https://journals.sagepub.com/doi/10.1177/1541931218621464>

[2] Asano, Miho, Hasegawa, Charitha; Applicability of Virtual Reality Systems for Evaluating Pedestrians' Perception and Behavior; <https://bit.ly/2GiqzLZ>

# Identifying Fairness Issues in Intelligent Systems

- An increasing number of critical decisions are supported by machine learning-based intelligent systems. This raises concerns about discrimination and fairness issues of those systems (e.g. in hiring, medical, and criminal justice).
- A growing body of research centers around the design of human-in-the-loop processes that leverage human contextual knowledge to identify and eliminate those fairness issues.
- What is the current state of the art of communicating and visualizing fairness issues to developers and end users? What research opportunities can be derived for the HCI community?

## STARTING POINTS

- ['It's Reducing a Human Being to a Percentage': Perceptions of Justice in Algorithmic Decisions\(2018\)](#)
- [AI Fairness 360: An Extensible Toolkit for Detecting, Understanding, and Mitigating Algorithmic Bias\(2018\)](#)
- [A comparative study of fairness-enhancing interventions in machine learning\(2019\)](#)
- [Explaining models: an empirical study of how explanations impact fairness judgment\(2019\)](#)

# Interactive Explanations from Intelligent Systems

- There is a growing social, ethical, and legal call that intelligent systems need to be capable of explaining their behavior and decisions to human users. This field is referred to as XAI ([eXplainable artificial intelligence](#)).
- Explanations are interactive conversations. Thus, practical and effective explanation interfaces must result in interactions between a human and a system.
- What interactive explanation interfaces were envisioned that support follow-up and drill-down actions after presenting an initial explanation? How could different methods be combined to achieve more powerful explanations?

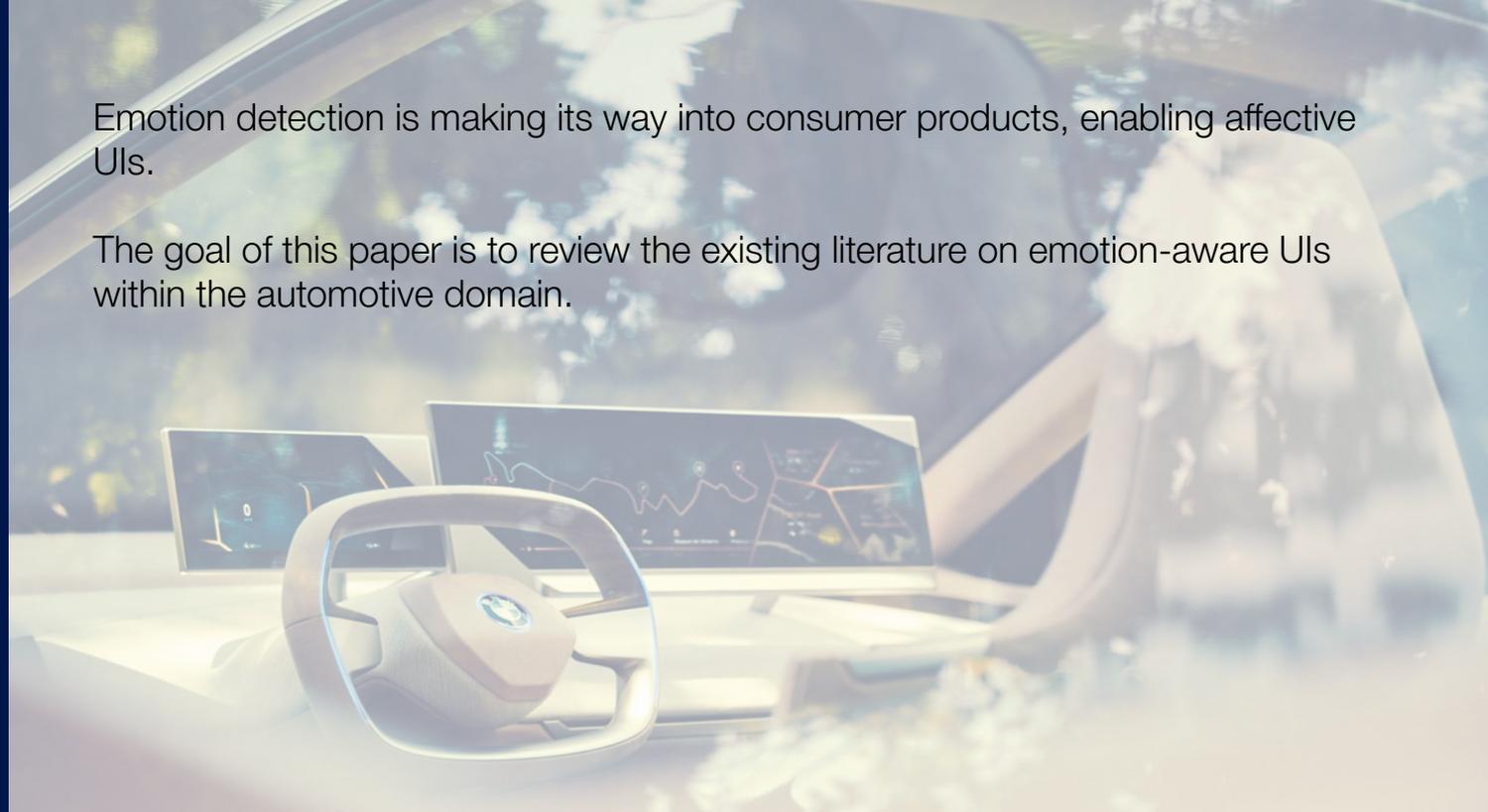
## STARTING POINTS

- [Trends and Trajectories for Explainable, Accountable and Intelligible Systems\(2018\)](#)
- [Peeking Inside the Black-Box: A Survey on Explainable Artificial Intelligence\(2018\)](#)
- [Why and Why Not Explanations Improve the Intelligibility of Context-Aware Intelligent Systems.\(2009\)](#)
- [Designs for explaining intelligent agents\(2009\)](#)

## UX Research on Emotion Detection Use Cases in Automotive User Interfaces.

Emotion detection is making its way into consumer products, enabling affective UIs.

The goal of this paper is to review the existing literature on emotion-aware UIs within the automotive domain.

- 
- [1] Eyben et al., 2010: Emotion on the Road: Necessity, Acceptance, and Feasibility of Affective Computing in the Car. <https://dl.acm.org/citation.cfm?id=1945534>
- [2] Jeon, 2016: Don't Cry While You're Driving: Sad Driving Is as Bad as Angry Driving. <https://doi.org/10.1080/10447318.2016.1198524>
- [3] Braun et al., 2019: Improving Driver Emotions with Affective Strategies. <https://doi.org/10.3390/mti3010021>

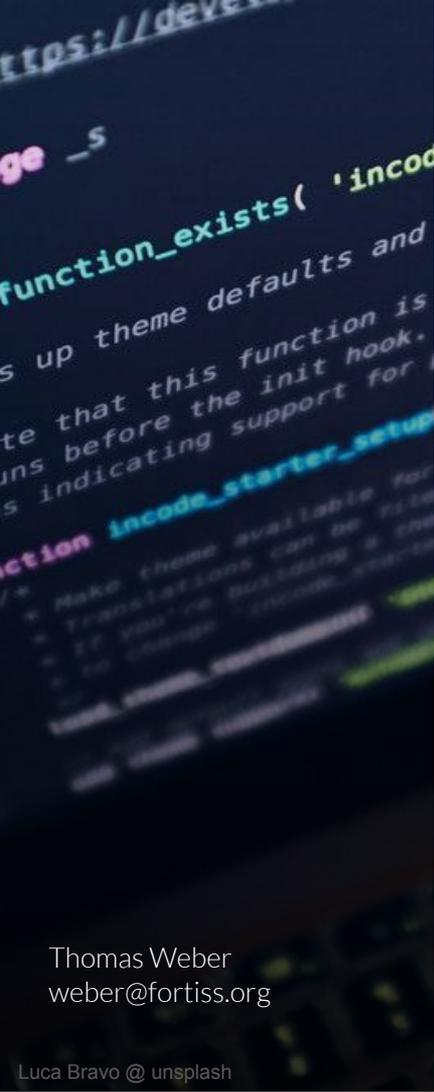


# Tools and Visualizations for Developer-Communication

- What tools exist to support developers in communicating about their software?
- What aspects of software can be communicated by visualization?
- What are the benefits for the development process, team communication, etc.
- Who is the target group?

[1] Mojtaba Shahin, Peng Liang, Muhammad Ali Babar: A systematic review of software architecture visualization techniques. *Journal of Systems and Software* 94: 161-185 (2014)

[2] Bogdan Vasilescu: Software developers are humans, too! *CSCW Companion 2014*: 97-100



# Human-Centered ML Engineering Tools

- What tools exist that support developing data-driven applications?
- What areas of the development cycle do they support?
- Who is the target group?
- How do they take their users needs into account?

Thomas Weber  
weber@fortiss.org

[1] Ian H. Witten, Eibe Frank: Data Mining: Practical Machine Learning Tools and Techniques with Java Implementations. Morgan Kaufmann 1999

[2] Fei-Fei Li, Jia Li: Cloud AutoML.

<https://www.blog.google/products/google-cloud/cloud-automl-making-ai-accessible-every-business/> 2018

## The impact of transition types on user experience in VR



*SimpleCut Transition*



*SuperFast Transition*



*Fade Transition*



*Vortex Transition*

[1] Men, Liang, et al. "The impact of transitions on user experience in virtual reality." *2017 IEEE Virtual Reality (VR)*. IEEE, 2017.

[2] MacQuarrie, Andrew, and Anthony Steed. "The effect of transition type in multi-view 360 media." *IEEE transactions on visualization and computer graphics* 24.4 (2018): 1564-1573.

# Trustful HCI



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@ifi.lmu.de

Provide an overview on human trust into artificial systems.

→ Definition, see 'classic' human 2 human trust

→ How can trust be influenced / generated (in HCI, with multimodality)?

→ How can trust be measured?

→ Historical development of trust in technology.

→ What are common (mis) trustful applications and why (e.g. autonomous driving)?

→ What is trustful design?



[→] S. Sousa, D. Lamas, and P. Dias, 'A Model for Human-Computer Trust', 2014.,

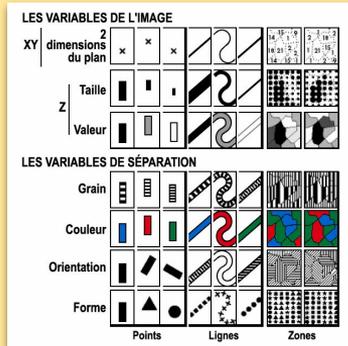
[→] R. Häuslschmid, M. von Bülow, B. Pflöging, and A. Butz, 'Supporting Trust in Autonomous Driving', 2017.

[→] <https://designshack.net/articles/ux-design/create-a-ui-that-users-can-trust/>

# Visualization & Perception in AR

Provide an overview on how content is presented and visually perceived in Augmented Reality.

- Information visualization in AR? How and why?
- Compare to other, established interface design spaces (smartphone, ...).
- What design guidelines (may) apply in AR?
- Limitations of human perception in AR.



## Threats and Countermeasures when using Biometrics

Physiological biometrics (e.g., fingerprint) become more and more common nowadays, and there is also a lot of research towards using behavioural features as biometrics (e.g., typing).

Similar to current authentication mechanisms (e.g., passwords), biometrics cannot provide absolute security. The tasks for this topic are to

- collect known attack vectors against biometric systems and countermeasures against those attacks from literature
- find and discuss areas, where attacks would be possible but either none have been shown or no countermeasures have been proposed

Starting Points:

- Overview of attack vectors in biometric systems [1]
- Some recent attacks proposed in the literature [2, 3]

[1] Roberts, Chris. "Biometric attack vectors and defences." *Computers & Security* 26.1 (2007): 14-25.

[2] Khan, Hassan, Urs Hengartner, and Daniel Vogel. "Augmented Reality-based Mimicry Attacks on Behaviour-Based Smartphone Authentication." *Proceedings of the 16th Annual International Conference on Mobile Systems, Applications, and Services*. ACM, 2018.

[3] Ferrer, Miguel A., et al. "A Biometric Attack Case Based on Signature Synthesis." *2018 International Carnahan Conference on Security Technology (ICCST)*. IEEE, 2018.



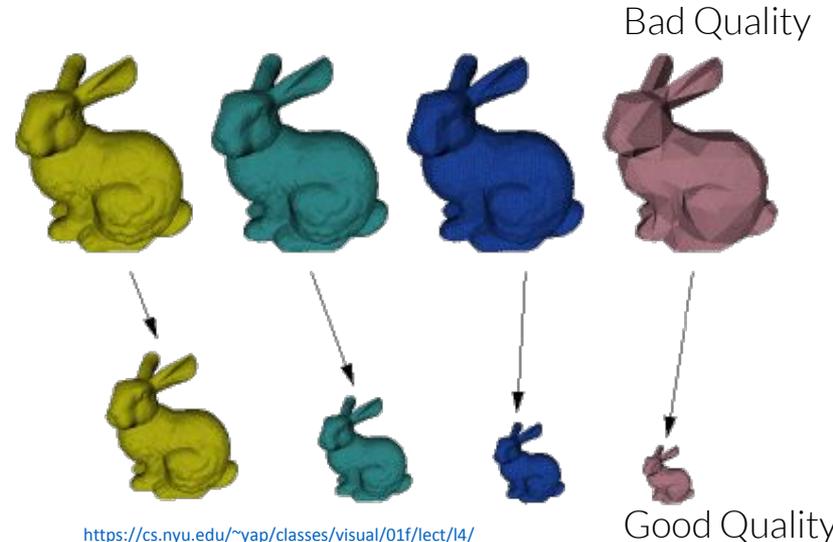
# Evaluating the Quality of 3D Polygonal Surfaces

The quality of 3D model is a function of input size versus realism it provides.

- In video games: Model quality refers to low poly count and high believability
- In animation: Model quality refers to the bone structure, number of joints and ease of configuring the kinematics
- ...

Literature review on assessing quality of 3D polygonal-based models:

- What are the current practical experiences when measuring 3D model quality?
- What are the quantitative factors/properties leverage the quality of a 3D model?
- What are the existing quantitative approaches for the assessment of 3D model quality?
- Does the evaluated objects influence the assessments? Why? How?
- ...



[1] Luebke, D., Reddy, M., Cohen, J. D., Varshney, A., Watson, B., & Huebner, R. (2003). Level of detail for 3D graphics. Morgan Kaufmann.

[2] Bulbul, A., Capin, T., Lavoue, G., & Preda, M. (2011). Assessing Visual Quality of 3D Polygonal Models. IEEE Signal Processing Magazine, 28(6), 80–90.

[3] Weier, M., Stengel, M., Roth, T., Didyk, P., Eisemann, E., Eisemann, M., ... Slusallek, P. (2017). Perception-driven Accelerated Rendering. *Computer Graphics Forum*, 36(2), 611–643. <https://doi.org/10.1111/cgf.13150>

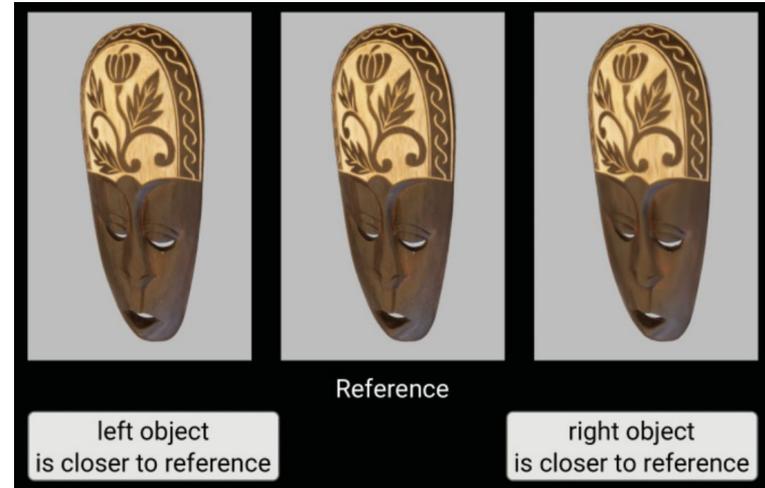
# Human Perception and Preference in 3D Modeling

- Domain expert sometimes have different cognition and preference than ordinary people while assessing the visual quality in 3D modeling.
  - Experts are conscious of the texture, illumination and viewport of 3D models
  - Non-experts are confined to the first impression of 3D models and even could not differentiate two discrepant models sometimes
- Literature review on subjective perception and preference in 3D modeling:
  - What are the differences in the visual performance of the evaluation between experts and non-experts?
  - What are the factors influence human perception and preference in 3D modeling?
  - How experts progressively evaluate the process of 3D modeling?
  - Can non-experts properly evaluate the quality of 3D model? Why? How?
  - ...

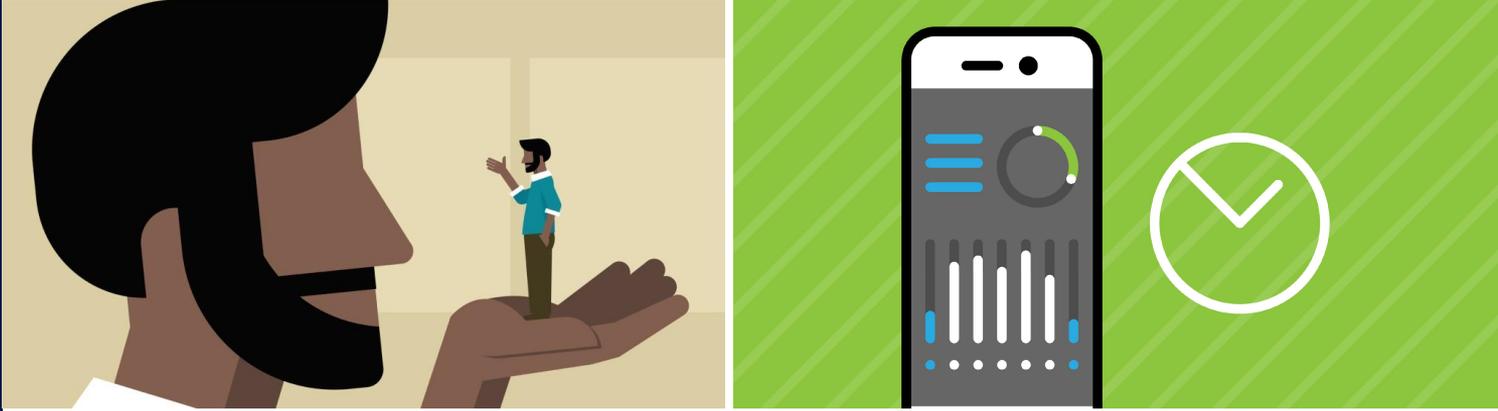
[1] Corsini, M., Larabi, M. C., Lavoué, G., Petřík, O., Váša, L., & Wang, K. (2013). Perceptual Metrics for Static and Dynamic Triangle Meshes. *Computer Graphics Forum*, 32(1), 101–125.

[2] Guo, J., Vidal, V., Cheng, I., Basu, A., Baskurt, A., & Lavoue, G. (2016). Subjective and Objective Visual Quality Assessment of Textured 3D Meshes. *ACM Transactions on Applied Perception*, 14(2), 1–20.

[3] Vanhoey, K., Sauvage, B., Kraemer, P., & Lavoué, G. (2017). Visual Quality Assessment of 3D Models. *ACM Transactions on Applied Perception*, 15(1), 1–18.



# Technology for Self-Reflection



Your task is to provide an overview of technical systems that are designed to support self-reflection and self-awareness.

Example Questions:

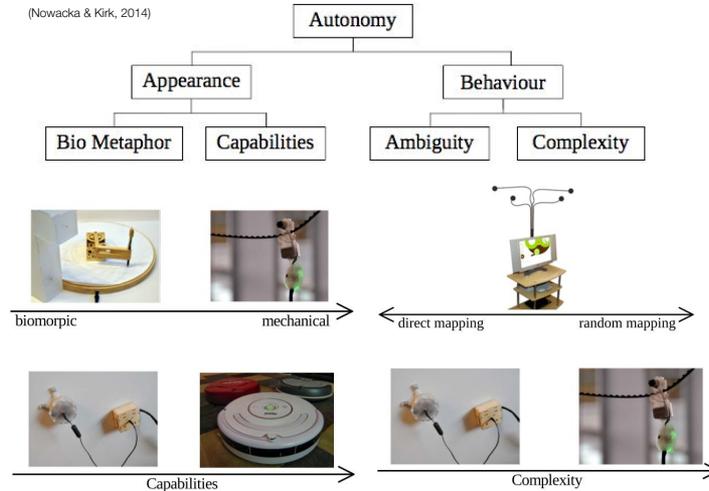
- Which types of such systems or applications exist? How can they be classified?
- How can self-reflection be defined, measured and evaluated?
- What are common design goals for technical systems to better support self-reflection and –awareness?

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

[2] Li, Ian, et al. "Understanding my data, myself: supporting self-reflection with ubicomp technologies." In Proc. UbiComp'11, ACM, 2011.

# Tangible Autonomous Interfaces in Automated Driving

(Nowacka & Kirk, 2014)



## Tangible Autonomous Interfaces (TAIs)

- autonomous behaviors in tangible user interfaces
- life-like behaviors

## Goals

- Collect automotive user interfaces research and prototypes, related to the idea of TAIs
- Set up the TAI framework in automated vehicle context



[https://www.researchgate.net/publication/261264111\\_Tangible\\_Autonomous\\_Interfaces\\_TAIs\\_Exploring\\_Autonomous\\_Behaviours\\_in\\_Tangible\\_User\\_Interfaces](https://www.researchgate.net/publication/261264111_Tangible_Autonomous_Interfaces_TAIs_Exploring_Autonomous_Behaviours_in_Tangible_User_Interfaces)



[https://www.researchgate.net/publication/261264111\\_Tangible\\_Autonomous\\_Interfaces\\_TAIs\\_Exploring\\_Autonomous\\_Behaviours\\_in\\_Tangible\\_User\\_Interfaces](https://www.researchgate.net/publication/261264111_Tangible_Autonomous_Interfaces_TAIs_Exploring_Autonomous_Behaviours_in_Tangible_User_Interfaces)



[https://www.researchgate.net/publication/261264111\\_Tangible\\_Autonomous\\_Interfaces\\_TAIs\\_Exploring\\_Autonomous\\_Behaviours\\_in\\_Tangible\\_User\\_Interfaces](https://www.researchgate.net/publication/261264111_Tangible_Autonomous_Interfaces_TAIs_Exploring_Autonomous_Behaviours_in_Tangible_User_Interfaces)



[https://www.researchgate.net/publication/261264111\\_Tangible\\_Autonomous\\_Interfaces\\_TAIs\\_Exploring\\_Autonomous\\_Behaviours\\_in\\_Tangible\\_User\\_Interfaces](https://www.researchgate.net/publication/261264111_Tangible_Autonomous_Interfaces_TAIs_Exploring_Autonomous_Behaviours_in_Tangible_User_Interfaces)

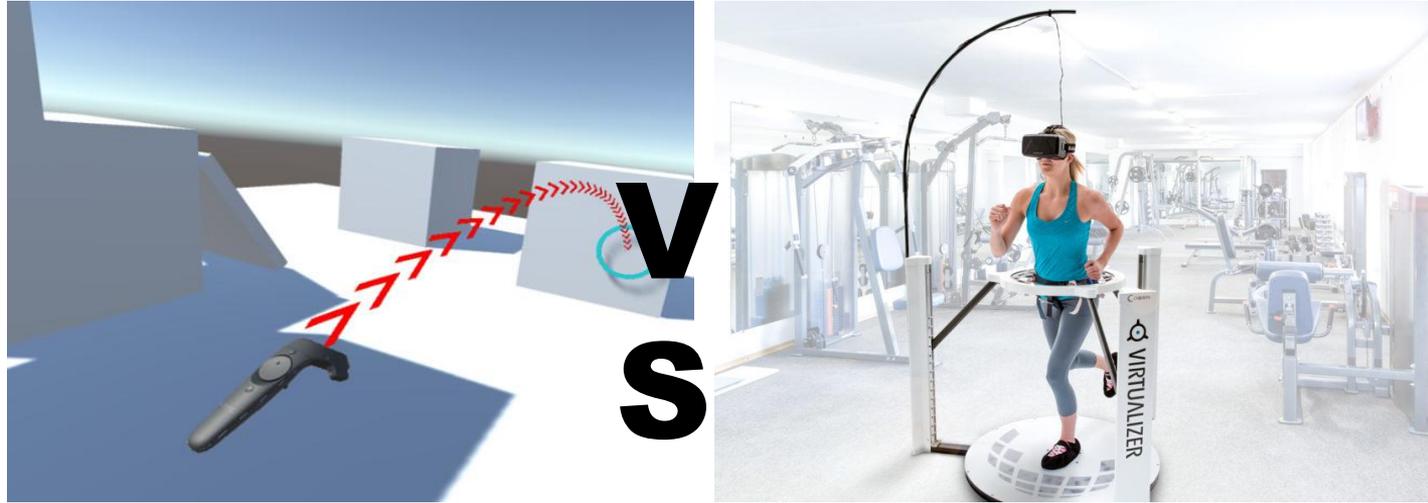
Jingyi Li  
jingyi.li@ifi.lmu.de

[1] Nowacka, Diana, and David Kirk. "Tangible autonomous interfaces (TAIs): Exploring autonomous behaviours in TUIs." ACM, TEI'14.

[2] Pederson, Thomas. From Conceptual Links to Causal Relations—Physical-Virtual Artefacts in Mixed-Reality Space. Diss. 2003.

# Comparing Continuous and Discrete VR Locomotion Techniques

Literature survey comparing VR locomotion techniques under consideration of the continuity of movement (walking vs. teleporting techniques).



[1] Boletsis, C. (2017). The new era of virtual reality locomotion: A systematic literature review of techniques and a proposed typology. *Multimodal Technologies and Interaction*.

[2] Bozgeyikli, E., Raij, A., Katkooori, S., & Dubey, R. (2016, October). Point & teleport locomotion technique for virtual reality.

# Authentication Challenges in the Smart Home

„Smart“ devices are increasingly present in users' homes. However, such devices do oftentimes not provide feasible authentication mechanisms. To understand authentication challenges in the smart home, this topic may comprise

- reviewing related research on authentication and privacy mechanisms in the smart home (starting points below)
- analysing (a sample set of) current „smart“ devices with regards to existing authentication mechanisms (and/or a lack thereof)
- collecting and analysing real-world stories of authentication (fails) on „smart“ devices (e.g., from product reviews)

... and many more.

[1] Sarah Prange, Emanuel von Zezschwitz, Florian Alt (2019). "Vision: Exploring Challenges and Opportunities for Usable Authentication in the Smart Home". To appear in 4th European Workshop on Usable Security.

<http://www.medien.ifi.lmu.de/pubdb/publications/pub/prange2019ieee/prange2019ieee.pdf>

[2] Alex Sciuto, Arnita Saini, Jodi Forlizzi, and Jason I. Hong (2018). "Hey Alexa, What's Up?": A Mixed-Methods Studies of in-Home Conversational Agent Usage. In Proceedings of the 2018 Designing Interactive Systems Conference.

[http://www.cmuchimps.org/uploads/publication/paper/192/hey\\_alex\\_a\\_what\\_s\\_up\\_studies\\_of\\_in\\_home\\_conversational\\_agent\\_usage.pdf](http://www.cmuchimps.org/uploads/publication/paper/192/hey_alex_a_what_s_up_studies_of_in_home_conversational_agent_usage.pdf)

[3] Yaxing Yao, Justin Reed Basdeo, Smirity Kaushik, and Yang Wang (2019). Defending my Castle: A Co-Design Study of Privacy Mechanisms for Smart Homes. In Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems.

<http://yaxingyao.com/img/chi19b-sub3082-cam-i16.pdf>

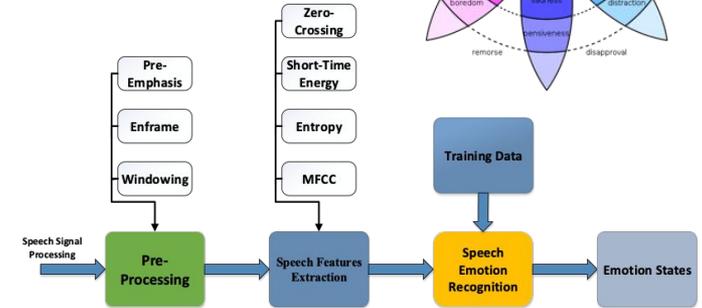
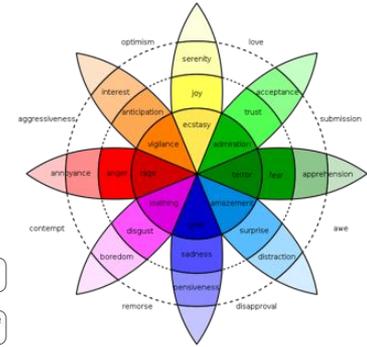
# Speech Emotion Recognition in Different Languages

**Emotion** is any conscious experience, which is also intertwined with mood, temperament, personality, disposition and motivation. (Wikipedia)

Database	Language	Family	Symbol	# Arousal		# 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

**Emotion recognition** plays a significant role in affective computing and adds value to machine intelligence [1,2].

How spoken expressions of emotions (anger, sad, happiness and neutral...) varied in different language will be benefit for the Human-Machine Interaction research [3,4].



[1] Christos-Nikolas Anagnostopoulos. Features and classifiers for emotion recognition from speech : a survey from 2000 to 2011.

[2] Monorama Swain. Databases, features and classifier for speech emotion recognition : a review

[3] RajesvaryRajoo. Influences of languages in speech emotion recognition: A comparative study using Malay, English and Mandarin languages.

[4] Silvia Monica Feraru. Cross-Language Acoustic Emotion Recognition: An overview and Some Tendencies.

# Next steps

write your supervisor this week!

meet your supervisor and discuss the structure of your paper

write and submit your first draft (until May 28)

See you at your 60s pitch!  
(mandatory attendance)

