Seminar und Praktikum, SoSe 2014

„Wissenschaftliches Arbeiten und Lehren“

Prof. Dr. Florian Alt
Daniel Buschek, M.Sc.
Outline for Today’s Lecture

• Sources for research ideas
• Presentation of research
  • How to write a scientific paper
  • How to present a paper at a scientific conference
  • How to review a scientific paper
Sources of Research Ideas
Sources of Research Ideas

- Suggestions from staff in department
- Past research student’s work
- Recent conference and journal papers
- Current events reported in the media
- Need expressed by potential clients
- People making assumptions or assertions with little supporting evidence
- Calls for conference papers
Sources of Research Ideas

CALL FOR SUBMISSIONS

AutomotiveUI'14: The 8th International Conference on Automotive User Interfaces and Interactive Vehicular Applications

September 17-19, 2014, Seattle, Washington, USA

For further information visit: http://www.auto-ui.org

AutomotiveUI, the International Conference on Automotive User Interfaces and Interactive Vehicular Applications, is the premier forum for UI research in the automotive domain. AutomotiveUI brings researchers and practitioners interested in both the technical and the human aspects of in-vehicle user interfaces and applications. AutomotiveUI'14 will address novel in-vehicle services, models of and concepts for enhancing the driver experience, driver performance and behavior, development of (semi-) autonomous driving, and the needs of different user groups.

TOPICS

AutomotiveUI 2014 invites you to submit original work in one or more of the following formats: full and short papers, workshops, work-in-progress posters, interactive demonstrations, and tutorials. Topics include, but are not limited to:

- Devices & Interfaces
  - Multi modal, speech, audio, gestural, natural I/O
  - Interfaces for navigation
  - Text input and output while driving
  - Applications and user interfaces for inter-vehicle communication
  - Sensors and context for interactive experiences in the car
  - Biometrics and physiological sensors as a user interface component

- Automation & Instrumentation
  - Automated Driving and Interfaces for (semi-) autonomous driving
  - Head-Up Displays (HUDs) and Augmented Reality (AR) concepts
  - Co-operative/Connected Vehicles
  - Assistive technology in the vehicular context
  - Information access (search, browsing, etc.)
  - Vehicle-based apps, web/cloud enabled connectivity

- Evaluation & Benchmarking
  - Methods and tools for automotive user interface research, including simulation
  - Automotive user interface frameworks and toolkits
  - Naturalistic/field studies of automotive user interfaces
  - Automotive user interface standards
  - Modeling techniques for cognitive workload and visual demand estimation

- Driver Performance & Behavior
  - Different user groups and user group characteristics
  - Subliminal cues and feedback to augment driving behavior
  - Emotional state recognition while driving
  - Detecting/measuring driver distraction
  - Detecting and estimating user intentions

SUBMISSIONS

AutomotiveUI'14 invites submissions in the following categories:
1) Full length papers (Submission deadline: Fri, April 25, 2014)
2) Workshops and Tutorials (Proposal submission deadline: Fri, June 6th, 2014)
3) Work-in-progress, Interactive demos and Doctoral colloquium (Submission deadline: Fri, August 8th, 2014)
Selecting a Topic

• Is the research likely to offer something new for your target users?
• Will your research still contribute something to knowledge, even if you do not complete all of the technical product in the time available?
• Is there a theory (or set of ideas) that will help you structure your approach, at least in the beginning?
• Can the research be carried out in the time available?
• Does the research topic fit in with your own motivations, strengths, and weaknesses, likes and dislikes?
• Does the research meet you own learning objectives?
• Do you have the necessary resources?
• Can you approach the topic without too much bias?
• Will the research be safe and ethical?
Presentation of Research
Types of Publications
Types of Publications

- Bachelor / Master / Diploma / Ph.D. thesis
- Technical Reports (usually on internal web pages)
- Workshops
- Conferences (peer reviewing)
- Journals (often peer reviewing)
- Books

**Relevant for scientific career:**
Publications in good conferences (CS) and in good journals (in most other disciplines).
Making an Argument

• When writing up your research, ask yourself the following questions
  • What is my research question?
  • What is my conceptual framework for understanding the question and my answer to it?
  • What is the answer to the question?
  • What is the evidence to justify my answer?
  • So what?

• Avoid spelling and grammar errors; else reader may assume that your work was undertaken in an equally slipshod fashion

• Assertions and conclusions should always be supported by evidence (no over-claiming)

• Evidence can come from what other people have already done (provide appropriate references)
Conference Publications
Conferences

• Before the conference
  • decide on topics and themes
  • invite scientists to submit (Call for Paper)
  • submission of papers
  • reviewing process
  • decision on acceptance / rejection
  • authors receive reviews on their submissions
  • for accepted papers, authors prepare a camera-ready version
Conferences

- During the conference
  - presentation for each paper by one of the authors
  - in addition: keynotes, invited talks, panels
- After the conference
  - papers and presentations are published
  - proceedings (usually online, sometimes printed)
About Conference Organisation

- Organisation Committee (General Chairs, Publicity, Publications, Student Volunteers, Registration)
- Program Committee (program chair, committee members)
- Peer Reviewing:
  - submission reviewed by 2-3 referees; reviews as basis for decision on acceptance or rejection
  - in critical cases, discussion within the program committee (usually online, for large conferences colocated meetings)
  - reviewers usually anonymous
  - Sometimes opportunity to write a rebuttal (reply to reviewers)
Submission Formats

- Short papers (usually 4 pages)
- Full papers (usually 8-15 pages)
- Systems papers (2-3 pages)
- Work-in-progress, posters, demos, videos (abstracts)
- Position papers
- Invited talks
Important HCI Conferences
### Important HCI Conferences

#### Top publications - Human Computer Interaction

<table>
<thead>
<tr>
<th>Publication</th>
<th>h5-index</th>
<th>h5-median</th>
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<tbody>
<tr>
<td>1. Computer Human Interaction (CHI)</td>
<td>78</td>
<td>114</td>
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<tr>
<td>2. Conference on Computer Supported Cooperative Work (CSCW)</td>
<td>38</td>
<td>53</td>
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<td>3. International Journal of Human-Computer Studies</td>
<td>37</td>
<td>50</td>
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<tr>
<td>4. ACM Symposium on User Interface Software and Technology</td>
<td>36</td>
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<td>5. UbiComp</td>
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<td>6. Interacting with Computers</td>
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<tr>
<td>7. ACM/IEEE International Conference on Human Robot Interaction</td>
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<td>8. Pervasive Computing</td>
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<td>9. Symposium On Usable Privacy and Security</td>
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<tr>
<td>10. International Journal of Computer-Supported Collaborative Learning</td>
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<tr>
<td>11. International Conference on Intelligent User Interfaces (IUI)</td>
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<td>41</td>
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<tr>
<td>12. ACM Transactions on Computer-Human Interaction (TOCHI)</td>
<td>26</td>
<td>40</td>
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<td>13. Mobile HCI</td>
<td>26</td>
<td>36</td>
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<tr>
<td>15. IEEE International Symposium on Mixed and Augmented Reality</td>
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<tr>
<td>16. ACM International Conference on Interactive Tabletops and Surfaces (ITS)</td>
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<tr>
<td>17. International Journal of Human-Computer Interaction</td>
<td>24</td>
<td>29</td>
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<tr>
<td>18. Intelligent Virtual Agents</td>
<td>23</td>
<td>26</td>
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<tr>
<td>19. Tangible and Embedded Interaction</td>
<td>22</td>
<td>28</td>
</tr>
<tr>
<td>20. Behaviour &amp; Information Technology</td>
<td>21</td>
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</tbody>
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*Dates and citation counts are estimated and are determined automatically by a computer program.*
Important HCI Conferences

- CHI (SIGCHI conference on Human factors in computing systems) - April, Deadline in September
- UIST (User Interface Software and Technologies) - November, deadline in April
- CSCW (Computer-Supported Cooperative Work)
- IUI (Intelligent User Interfaces)
- MobileHCI
- TEI (Tangible and Embedded Interaction)
- ITS (Interactive Tabletops and Surfaces)

In any case it is advisable to consult your supervisor / professor before submitting.
Journal Submissions

- Different publishers (Springer, Elsevier, Oxford University Press, MIT Press, IEEE, …)
- Responsibility:
  - Editor
  - Editorial Board
- Submissions to editor or the editorial board
- Reviews by experts from the field (usually not on the editorial board)
- Papers sometimes anonymised (usually not helpful)
- Oftentimes, revisions are possible
How to Write a Scientific Paper
Motivation

Gerard Piel
"Without publication, science is dead." [Day u. Gastel, 2006]

Simon Peyton Jones
"We write papers mainly to impress others, gain recognition, and get promoted." [Jones, 2004b]
Motivation

- Here is a problem
- It is an interesting problem
- It is an unsolved problem
- Here is my idea
- My idea works (details, data)
- Here is how my idea compares to other people’s approaches
Phases of Writing a Paper

- Prepare
- Structure
- Write
- Revise
Phases of Writing a Paper

- How long can the paper be?
- How does it need to be formatted (IEEE, ACM, Springer, Elsevier)?
- How are figures, tables, and references presented?
- In which language to write the paper?
- What are appropriate topics?
- When is the deadline for submission (see Call-for-Papers)?
Phases of Writing a Paper

- Come up with a meaningful title
- Decide on the author order
- Abstract (150 words) and keywords
- Introduction
- Related work
- Methodology: the problem, the idea, details
- Results / Discussion / Future work
- Acknowledgements
- References
- (Appendix)

Prepare → Structure → Write → Revise

Requirements and Design Space for Interactive Public Displays

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ABSTRACT
Digital interactions moving into public spaces. Interactive computer
and public displays are deployed in urban environments, malls,
and shops. Users, drivers, tourists, and pedestrians are experimen-
ting with and interacting with digital displays outside. Design.
In this paper, we discuss the fundamentals of creating exciting
public displays and multimedia experiences enabling new forms
of digital content. Interaction in public space and with public
displays can be categorized in phases, each having specific
requirements. Articulating, engaging, and motivating the user
are central design issues that are addressed in this paper. We
provide a comprehensive analysis of the design space exploring
mental models and interaction modalities and we conclude a taxon-
omy for interactive public display from this analysis. Our analysis
and the taxonomy are grounded in a large number of research
projects, including studies and experiments. With our contribu-
tion we are at providing a comprehensive guide for designers
and developers of interactive multimedia on public displays.

Categories and Subject Descriptors.
H.5.1 [Multimedia Information Systems]: Interaction Interface
and Presentation.

General Terms
Design, Human Factors.

Keywords
Public Displays, Interaction, Requirements, Design Space.

1. INTRODUCTION
Traditionally, most multimedia applications are found in personal
devices, such as PCs or mobile phones. However, electronic
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tage and that copies bear this notice and the full citation on the
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1.1 REQUIREMENTS ANALYSIS

While many findings from HCI also apply to public displays,
such as usability, autonomy, and interaction with them, and
due to the issues of interaction in the public. A number of
multimedia systems have been designed for personal devices
or for use in home environments; these issues have not yet
drawn significant attention. For public multimedia systems,
hence, the audience approaches them is crucial.

1.1 Interaction Phases
In contrast to many other computing technologies, interac-
tion with public displays does not start with the interaction itself.
Instead, the audience is simply passing by, without any inter-
tation. This could be a reason why the model of the different
phases of intervention has been presented in [39] (Figure 1)
This model builds on the model presented in [30], but instead
focuses on behaviors...
Phases of Writing a Paper

- Writing up helps to clarify ideas
- Start writing during the research project
  - if leaving writing up until the last minute, you may not have enough time to produce a good paper
  - amount of writing, mass of data, and papers to be organised and brought into order is often underestimated
- writing is based on experience
Phases of Writing a Paper

- Make a time plan (deadlines!)
- Read related work, take notes
- Think about definitions
- For each sentence, think about what information you want to convey to the reader or what the effect on the user should be.
- Oftentimes, sentences do not really have a purpose or are not really related to the topic. In these cases, omit the sentence.
- Sentences that are meant to convince the reader of the author’s smartness but are hardly related to the topic, should be avoided.
- Avoid jokes.
Phases of Writing a Paper

- Acknowledge those who have assisted in your research (supervisor, colleagues, research participants, spouse, friends, funding body)
- Report quantitative data in a separate section from discussion and interpretation of those results
- Qualitative findings and interpretation of the data often weaved into one section
- Design and creation research often also describes the development
- Following the conventional structure helps readers to easily find their way around
- Provide signposts (“The last chapter explained that… “; “The structure of this paper is as follows…”)
- Use the “editorial we”; e.g., “We designed an experiment …” (reports written in the third person passive is considered old-fashioned; e.g., “An experiment was designed to …”)
Phases of Writing a Paper

- Prepare
- Structure
- Write
- Revise

Develop a Writing Routine

- People have very individual writing routines (e.g., setting yourself a target of 1500 words a day)
- Write in the way that suits you best (e.g., with background music or in total silence)
- Write at the time of day when you are at your best
- Use the time when you function less well to do the more mechanical parts (spelling corrections, checking reference details, creating and fixing figures / tables)
- The first draft does not have to be perfect!
- Go for a walk if you are stuck
Phases of Writing a Paper

- Prepare
- Structure
- Write
- Revise

Presentation of Data

- Provide tables and figures of interesting data
- For qualitative data it is usually good to provide quotes from the interviewees
- Clearly label tables and figures (explain to the reader what they show)
Phases of Writing a Paper

Prepare → Structure → Write → Revise

Readers

There are very different types of readers. Your text should cater to the needs of all of them!

- **Search Engines**: choose title and keywords leading to a high search rank. Use Google Scholar for testing!

- Readers who want to find out whether the article is interesting or *relevant* to them. Usually only read the title and maybe the abstract

- Readers who are *interested in the results* and want to use them themselves. Should already get the most important information on the first pages. If an interesting idea isn’t presented but on the last page, it is likely that they miss it.

- Readers who want to *work on the topic*. Probably need all the details.
Phases of Writing a Paper

- Are all necessary information included in the paper?
- Check for consistency?
- Is the text understandable?
- Is the methodology sound?
- Are there typos or grammar errors?
- Are figure and tables easily readable (font size, colors) and referenced in the text?
- Do you provide meaningful captions?
- Does the format meet the specifications of the conference?
Phases of Writing a Paper

- When you have completed a chapter or paper, leave it for a few days
- Have a friend read your text
- Give a polished draft to your supervisor
- A good peer-review will point out both strengths and weaknesses
- If rejected, good reviews will make suggestions how to improve the paper in a way such that it is publishable in the future
Tools

• Tools for text editing
• Tools for literature research
• Tools for creating figures
• Tools for creative work
• Tools to support the process
Text Editing

- Simple text editors
- OpenOffice
- MS-Word
- LaTeX / Lynx
- GoogleDocs
- many more

Most conferences require Latex or Word!
Tools for Literature Research

- Google und Google Scholar
- Bing, Yahoo, Baidu, Vandex
- ACM Digital Library (http://www.acm.org/dl)
- CiteSeerX (http://citeseer.ist.psu.edu/index)
- DBLP Computer Science Bibliography (http://www.informatik.uni-trier.de/~ley/db/)
- many more

Don’t forget libraries

- OPACplus der LMU-UB (https://opacplus.ub.uni-muenchen.de)
- DBIS der LMU-UB (http://rzblx10.uni-regensburg.de/dbinfo/fachliste.php?bib_id=ub_m&lett=l&colors=&ocolors=)
Tools for Graphics

- MS Office / MS Visio
- Xfig (http://www.xfig.org/)
- Adobe Creative Suite
- Gimp
- and many more (ideas?)
Reference Tools

- Citavi: http://www.citavi.com/
  (LMU Campuslizenz verfügbar)

- EndNote: http://www.endnote.com/
  (LMU Campuslizenz verfügbar - (http://
  www.ub.uni-muenchen.de/elektronische-medien/
  literaturverwaltungsprogramme/endnote/)

- Zotero (https://www.zotero.org)

- LATEX und BibTeX (http://www.bibtex.org/), also
  see http://samy.informatik.hu-berlin.de/~piefel/
  LaTeX-PS/V04-literatur.pdf

- JabRef als Beispiel eines BibTeX Editors (http://
  jabref.sourceforge.net/)
Hints for Citations

- DIN 1505-2 [Lorenzen, 1997]
- Collection of links from the FU Berlin (http://www.ub.fu-berlin.de/service_neu/einfuehrung/bookmarks/zitieren.html)
- Hints from the LMU (http://www.edu.lmu.de/spe/downloads/StuBer_WissenschaftlichesArbeiten.pdf)
- Guidelines from the group for media informatics (http://www.medien.ifi.lmu.de/studierende/abschlussarbeiten/master/richtlinien.xhtml)