Hauptseminar, SoSe 2017

“How to present scientific work”

Prof. Dr. Florian Alt
Outline for Today’s Lecture

Presenting Scientific Work

• How to write a scientific paper
• How to review a scientific paper
• How to present a paper at a scientific conference
Presentation of Research
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).
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 co-located 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

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<td>20. IEEE Transactions on Haptics</td>
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Human Factors in Computing Systems (CHI)

• Leading HCI Conference (appr. 3000 participants)
• This year in Denver
• Submission Formats: Papers, Notes, Late-Breaking Works (formerly called Work-in-Progress), Demos (Interactivity), Videos, Courses, Special Interest Groups, Workshops
• Conference Website: https://chi2017.acm.org
• ACM Digital Library: http://dl.acm.org/event.cfm?id=RE151
Joint Conference on Pervasive and Ubiquitous Computing (UbiComp 2016)

- Next conference in Maui
- More technical venue
  Focusing on systems & infrastructures, devices & techniques, applications & experiences, methodologies & tools, theories & models
- Submission Formats:
  Papers, Notes, Poster, Demos, Workshops
- Conference Website:
  http://ubicomp.org
- ACM Digital Library:
  http://dl.acm.org/event.cfm?id=RE336
- Co-located with International Symposium on Wearable Computers (ISWC) - http://iswc.net/
User Interface Software and Technology Symposium (UIST)

- Next conference in Montreal
- Conference at the intersection of HCI and Computer Graphics
- Very technical (close to engineering) Focusing on fabrication, graphical & web user interfaces, tangible & ubiquitous computing, virtual & augmented reality, multimedia, new input & output devices, and CSCW
- Submission Formats: Papers, Notes, Poster, Demos,
- Conference Website: http://uist.acm.org
- ACM Digital Library: dl.acm.org/event.cfm?id=RE172
Designing Interactive Systems (DIS)

- At the intersection of HCI and Design
- Focus on Design Methods and Processes, Experience, Application Domains, Technological Innovation
- Submission Formats: Papers, Pictorials (sketches, illustrations, diagrams), workshops, demos
- Conference Website: http://www.dis2017.org
Human-Computer Interaction with Mobile Devices and Services (MobileHCI)

- Next conference in Vienna
- Conference on HCI with Mobile Devices
- Focus on systems & infrastructures, devices & techniques, applications & experiences, methodologies & tools, theories & models
- Submission Formats: Papers, Workshops, Posters, Demos
- Conference Website: http://mobilehci.acm.org
- ACM Digital Library: http://dl.acm.org/event.cfm?id=RE395
Tangible Embedded and Embodied Interaction (TEI)

- Conference at the intersection of HCI and Design of Tangibles
- Focus on human-computer interaction, design, interactive art, user experience, tools and technologies
- Submission Formats: Papers, Studios, Work-in-Progress, Demos
- Conference Website: http://www.tei-conf.org
- ACM Digital Library: http://dl.acm.org/event.cfm?id=RE271
Interactive Surfaces and Spaces (ISS)

- Formerly known as Interactive Tabletops and Surfaces (ITS)
- Focus on tabletop, digital surface, interactive spaces and multi-surface technologies
- Submission Formats: Academic papers, application papers, workshops, demos, posters
- Conference Website: http://iss2016.acm.org
- ACM Digital Library: http://dl.acm.org/event.cfm?id=RE124
Further Conferences (HCI in general)

**Intelligent User Interfaces**
- At the intersection of HCI and Artificial Intelligence / Machine Learning
- Conference Website: [http://iui.acm.org](http://iui.acm.org)

**NordiCHI**
- Focus on user interfaces, design, InfoVis, interaction, usability
- Conference Website: [http://www.nordichi2016.org](http://www.nordichi2016.org)

**INTERACT**
- Focus on methods and tools, specific applications, cross-cultural and social issues
- Conference Website: [http://www.interact2017.org](http://www.interact2017.org)
Further Conferences (specific topics)

**Augmented Human**
- Focus on wearable computing, Brain-Computer Interfaces, Smart Textiles
- Conference Website: [http://augmented-human.com](http://augmented-human.com)

**AutomotiveUI**
- Focus on automotive user interfaces and interactive vehicular applications
- Conference Website: [http://www.auto-ui.org](http://www.auto-ui.org)

**Pervasive Displays Symposium**
- Focus on pervasive displays, designing content, interaction techniques
- Conference Website: [http://pervasivedisplays.org](http://pervasivedisplays.org)
Further Conferences (specific topics)

**Eye Tracking Research and Applications (ETRA)**
- Focus on eye tracking technology and gaze interaction

**Pervasive Eyetracking and Mobile Eye-based Interaction (PETMEI)**
- Focus on eye tracking technology and gaze interaction
- Workshop Website: [https://www.petmei.org](https://www.petmei.org)

**Symposium on Usable Privacy and Security (SOUPS)**
- Focus on security and privacy functionality, security testing, deployments
- Symposium Website: [https://www.usenix.org/conference/soups2016](https://www.usenix.org/conference/soups2016)
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
Journal Submissions

- Generally less prestige than the top conferences
- Publication of combined conference papers with additional material is common
- Often special issues or themed issues
  - Calls for papers are indicators for “new topics”
  - Guest editors are generally experts
  - Peer-reviewed content
- Magazines have columns on specific topics (non-reviewed content, quick route to publish)
- Comprehensive List at: http://www.idemployee.id.tue.nl/g.w.m.rauterberg/hci-journals.html
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
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)
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

- Prepare
- Structure
- Write
- Revise

• 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)
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 …”)
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

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/)
- Mendeley
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)
How to Review a Paper
Elements of a Review

• Short summary of the text
• Contribution statement
• Classification within the scientific context
• Typical questions to ask
  • what is new about this work
  • which problem is this work trying to solve
  • which other work does it extend
  • what is the argumentation of the authors
Critical Review

- A review is NOT about personal interests or personal criticism of the author
- The review should focus on content and presentation
- Typical questions
  - which questions are not answered?
  - what are the limitations of the work?
  - where are contradictions?
  - is the argumentation sound and easy to follow?
  - does the work really provide a contribution?

Ethics in Scientific Communication

- It is ok to consider a contribution to be superfluous or of no need for the scientific community.
- It is not ok to personally judge or insult the author.
Tasks of a Reviewer

• Analyse for
  • correctness
  • originality
  • significance
  • quality
  • improvements

• How to
  • judge whether something is worth to be published?
  • determine which improvements are required prior to publication?
Important Questions

• What is a paper that “merits publication”?
• What is expected from a reviewer?
• How does a typical report for a review look like?
• What questions should be covered?
• What is the overall verdict?
When does a paper merit publication?

• A paper merits publication if there is a scientific contribution

• Examples:
  • new and significant results
  • new knowledge through synthesis of known results
  • helpful surveys and tutorials
  • combinations of these categories

• worth to publish: small, surprising results that stimulate a new direction for future research

• not worth to publish: repetition of results from other papers

• only worth to publish after improvement: good ideas that are badly presented
Role of the Reviewer

• Subjective opinion whether or not a paper provides a scientific contribution
• Usually more than one reviewer

How to find / chose reviewers?
• paper bidding
• keywords
• experts from the field

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<tr>
<th>ID</th>
<th>Paper Title (Full Paper)</th>
<th>Paper Topics</th>
<th>Current Assignment?</th>
<th>Bid This Paper</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>A formalism of ontology to support a software maintenance knowledge-based system</td>
<td>Formal Methods; Knowledge-Based and Expert Systems; Software Process Modeling;</td>
<td>1</td>
<td>Bid</td>
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<tr>
<td>2</td>
<td>A Measure and Prediction Strategy for QoS of Distributed Security Policy Server</td>
<td>Artificial Intelligence Approaches to Software Engineering; Software Engineering Decision Support; Software Quality;</td>
<td>0</td>
<td>Bid</td>
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<tr>
<td>3</td>
<td>The Expressive Language ALCNHR++ (II) For Knowledge Reasoning</td>
<td>3. Automated Reasoning; 43. Software Process Modeling;</td>
<td>0</td>
<td>Bid</td>
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<tr>
<td>4</td>
<td>Two-Dimensional Process Model for Aspect-Oriented Software Development</td>
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<td>0</td>
<td>Bid</td>
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Expectations Towards a Reviewer

- Decision in the form of a recommendation
  - accept
  - (accept with minor revision)
  - (accept with major revision)
  - reject
- Justification for the recommendation
- Ways for improvement (particularly in case of rejection)
- How critical should a reviewer be?
Typical Review Report

• Overall judgement (usually scale from 1-5)
• Summary (1-5 sentences)
• Originality and significance
• Quality (methodology, precision, errors, presentation)
• Justification for the rating
• Optional hints for the editors

• Authors receive “cleaned” version / meta-review
• Deadlines
Examples for Review Forms

Review of Submission 567

Reviewer: Florian Alt
Submission: Towards a privacy threat model for interactive public displays
Review type: External

Please direct any questions to the submission's primary: bulling@mpi-inf.mpg.de.

Confidence

How confident are you about your assessment of the work?

- 4 - Highly confident - I consider myself an expert in the area
- 3 - Very confident - I am knowledgeable in the area
- 2 - Somewhat confident - I have passing knowledge
- 1 - Not very confident - I have no knowledge in the area

Contribution to UbIComp

Please briefly summarise this submission's contribution to Pervasive and Ubiquitous Computing. Think broadly and positively in terms of the types of contribution a paper can make, referring to the call for papers if necessary.

Overall Rating

Provide your overall rating of the paper. Your written review should support your overall rating.

- 6 - Definite accept: I would argue strongly for accepting this paper.
- 5 - Probably accept: I would argue for accepting this paper.
- 4 - Maybe accept: I would agree with accepting this paper.
- 3 - Maybe reject: I would agree with rejecting this paper.
- 2 - Probably reject: I would argue for rejecting this paper.
- 1 - Definite reject: I would argue strongly for rejecting this paper.

R&R Suitability (Hidden from authors)

Revise and Resubmit Suitability: In case the submission does not get directly accepted at the PC meeting, please rate its potential to be resubmitted in a second round, after the authors have had 5 weeks to do additional work. This might include additional experiments and/or implementation work (the necessary improvements should be made clear in your review). Note that such a resubmission does not guarantee acceptance in the second round.

- No need to resubmit - only minor revisions needed on the current version
- High potential for significant improvement in 5 weeks
- It would be possible to improve within 5 weeks, but difficult
- Reject without offering revise/resubmit - 5 weeks is too short to improve submission sufficiently

The Review

Please describe both what you like about the submission, and what problems you see with it. If possible, identify opportunities for improvement and provide concrete suggestions - in particular in light of a potential "revise and resubmit" decision, where the authors would have additional 5 weeks of time. As always: please be objective and try to maintain a courteous and friendly tone throughout your review.

Confidential Comments (Optional) (Hidden from authors)

Optional comments for the reviewers and program committee that will NOT be sent to the authors:
Review forms you are going to use

Evaluation

Overall evaluation (*). Please provide a detailed review, including a justification for your scores. Both the score and the review text are required.

- 3: strong accept
- 2: accept
- 1: weak accept
- 0: borderline paper
- -1: weak reject
- -2: reject
- -3: strong reject

Reviewer’s confidence (*).

- 5: (expert)
- 4: (high)
- 3: (medium)
- 2: (low)
- 1: (none)

Confidential remarks for the program committee. If you wish to add any remarks intended only for PC members please write them below. These remarks will only be seen by the PC members having access to reviews for this submission. They will not be sent to the authors. This field is optional.

Attachment. If your review is in a non-text format, for example, a PDF file, upload it here:
Choose File - no file selected
Possible Verdicts (Smith, 1989)

- Major results - very significant
- Good, solid, interesting work; a definite contribution
- Minor, but positive, contribution to knowledge
- Elegant and technically correct but useless
- Neither elegant nor useful, but not actually wrong
- Wrong and misleading
- The paper is so badly written that a technical evaluation is impossible
Some Final Issues

- Multiple submissions
- Plagiarism
- Anonymity
- Acknowledgements
- Reputation of the authors
- Can you use material from a paper under review?
- Conflict of interest