

# Internet of Things Introduction into Scientific Work

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# Where to get help?



#### StudyCompass:

https://www.frankfurt-university.de/de/studium/studycompass-beratungs-und-unterstuetzungsangebote/

ReActing: https://www.frankfurt-university.de/de/ hochschule/einrichtungen-und-services/weitereeinrichtungen/reacting/



# The Internet of Things

What is the Internet Of Things?



# What do you find exciting or revolutionary about the IOT?





# What do you find dangerous about the Internet of Things?





# Agenda

- 1 Scientific Writing
- 2 Conducting Reviews

3 Presentations



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1 Scientific Writing

**2** Conducting Reviews

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# How to write a scientific paper?

How would you start? What are your Biggest uncertainties right now?



#### Scientific workflow

- Choose your research topic
- Identify your problem statement
- 3 Create your hypothesis
- 4 Review the literature
- 5 Optional: conduct research
- 6 Evaluate
- Identify publication target
- 8 Write
- Submit (and pray!)
- Receive reviews
- 💶 Finalize



# Types of Publications

#### Content/Style

- Original Research
- Review/Survey Article
- Position/Opinion Paper
- Case Study
- Problem Statement

#### Format/Publication

- Conference/Workshop Proceedings
- Journal Paper
- Short Paper
- Poster
- Demo
- Non-scientific Publication



Check the web https://www.ra-

- Submit original and unpublished paper
- Limited to 6 pages in PDF format
- Report should follow IEEE Two-Column format
  - Templates can be found here:

http://www.ieee.org/conferences\_events/conferences/publishing/templates.html



# What to read?

What should I read? How do I read? Where do I find it?



#### Research Literature

- Library
- Google Scholar
- ResearchGate

#### **Correct Citation**

- Back your statements
- Insert a reference for any direct or indirect citation
- Direct citations must be marked with quotation marks

#### No Plagiarism!

Plagiarism will not be tolerated! Plagiarism will be reported to the examination office and can lead to exmatriculation in case of repetition.



## Writing a Paper

- Define the scope
- Develop a red thread
- First Draft
- Iterations and getting feedback
- Polishing





## Organization

- Title and authors (with affiliation and contact data)
- Abstract
- Introduction (including a TOC)
- Body
- Conclusion
- Optional: Outlook
- Bibliography



#### Structure

# Example Structure (Original Research)

- Introduction
- Problem statement
- Related work
- Main idea
- Spotlight
- Evaluation
- Conclusion

# Example Structure (Survey)

- Introduction
- Definition of key terms
- Classification/Categorization
- Case studies
- Discussion
- Conclusion



#### **Visualizations**



- Graphs and figures can help understanding
- Tables are valuable for categorizations and comparisons
- Always put captions and labels to graphs, figures, and tables
- Refer to them in the text
- Readability is key!



### Style

- Be concise
- Be objective and accurate
- Keep sentences and paragraphs short
- Use a simple language
- Avoid indirect (passive) statements





## **Tooling**

#### Microsoft Word



Source: https://superuser.com

#### PLEX

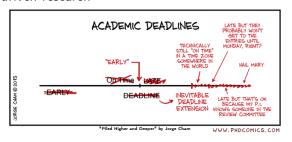


Source: https://tex.stackexchange.com



#### Common Pitfalls

- Find a problem for your solution
- Avoid negative results
- Dubious publisher
- Deadline driven research



www.phdcomics.com



Happy writing!



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# Peer Reviewing

- Why is peer reviewing important in science? How to conduct a good review?



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- Why is peer reviewing important in science? How to conduct a good
  - review?



## Reviewing a Paper

- Read the abstract
- Decide on acceptance of invitation to review
- Read the paper and make notes
- Try to follow and understand the thoughts
- Perform a background check on existing literature
- Evaluate . . .
  - originality
  - timeliness of the contribution
  - relevancy wrt publication target
  - presentation
  - grammar and spelling



## Getting Help

- Many journals and editors offer instructions on conducting constructive and helpful reviews
- For example:
  - Elsevier: How to conduct a review https://www.elsevier.com/reviewers/how-to-review
  - SAE: A Step-by-Step Guide to Writing a Peer Review https://www.sae.org/participate/volunteer/reviewer-resources/writing-guide
  - Wiley: How to perform a peer review https://authorservices.wiley.com/Reviewers/journalreviewers/how-to-perform-a-peer-review/index.html



#### General Rules

- Stay respectful and fair
- Be nice, yet direct
- Familiarize yourself with the topic
- Go top-down
- Validate claims and check the references
- Select the appropriate receiver



- Is the subject addressed relevant for the scientific community?
- Is the content of the paper new?
- Does the topic match the scope of the journal/conference/workshop?
- Are the conclusions supported by the data?
- Is the content of the paper object and un-biased?
- Are all references listed and citations marked?
- Is the manuscript well organized and readable?
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# Writing the Review

- Summarize the contribution of the paper in a few sentences
- 2 Name the highlights of the paper
- Give a general impression of the paper
- Provide the most important observations
- 5 List all detailed comments
- Comments wrt to typos etc should go into a sort of appendix
- Give a recommendation



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#### Presentation Format

- Presentations will happen in the last weeks of the semster
- Two to three presentations per session
- Each presentation should be 20 minutes + 5 minutes Q+A



# What is a Good presentation?



- Present the highlights from your work
- Uncritical brainstorming, critical selection
- **\blacksquare** Focus on the content first, then on the format ( o slides)
- What does the audience need to know to follow your presentation
- Make the audience interested in your work
  - → Motivate your topic
    - ightarrow Convince them that your paper is worth reading
    - ightarrow Ensure they understand why you present each piece of information
- Target your audience



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- $lue{}$  Rule of thumb: pprox one slide per minute
- Time management is crucial
- Keep your slides lean: the less text, the better
- Leave out any non-essential detail
- Use pictures (→ but mind the license)
- User appropriate headlines
- Do not leave anyone behind
- Conclude your talk



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#### Typical Structure

- Motivation
- Overview over your talk
- Related work
- Contribution
- Key insights (or evaluation)
- Conclusion



What is the key thing the audience should remember?
Is there enough background material for the intended audience?
Is any material unnecessary? Could some of the material be left for people to read about later?
Is the talk self-contained? Is it appropriate to an audience of mixed background?
Is the length appropriate? Is the structure right for the length?
Does the talk have a motivating preamble?
Is the talk balanced, without too much time given to any one element?
Are complex issues explained in gentle stages?
Are the results explained? Is the impact of the results made clear?
What were the limitations of the research? Where are they discussed?



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Have you found good tools, or methods, for drafting a talk?
Are figures uncluttered, with legible, horizontal text?
Is there any unnecessary animation? Is the style appropriate, or flashy?
Are the font sizes reasonable?
Are the numbers necessary? Are more diagrams needed?
Are the slides simple? Do they have unnecessary ornamentation or distracting use of colour?
Does each figure illustrate a major point? Does it illustrate the point unambiguously?
Are there enough examples?
Do you have the right to use the figures and illustrations?



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Do you explain why the research is interesting or important?
Is there a clear conclusion?
Have you rehearsed the talk? What mechanisms are you using to keep yourself to
time?
Have you memorized the talk?
If you are asked a question you can't answer, how will you respond?
Have you rehearsed your manner? Will your enthusiasm show?
Do you know how to use the equipment?



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Taken from "Writing for Computer Science" by Justin Zobel

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