IoT Seminar:
Writing & Presenting Scientific Content in the area of the Internet of Things

Sommer Semester 2023

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Legal Disclaimer

This is an educational screencast.

Outline

- General information about the seminar course
    - Seminar Informations
    - Student Requirements
- Goal of seminar
    1. Write a scientific report
    2. Give a technical talk
- Technical reporting: standards and norms
- Requirements of an oral technical presentation
- Technical Area of the Seminar

Seminar Information

FRANKFURT UNIVERSITY OF APPLIED SCIENCES

Date / Time: every Monday / 14:15 – 15:45 (2:15 pm – 3:45 pm)

📍 IoT-Seminar

   📍 Live room 234 / Building 1

   📍 1-128 Office hours: 16:00 to 17:00 every Monday (or after consultation)

🎓 Lecturer: Olaf Reich

   @ Email: olaf.reich@fb2.fra-uas.de (use office hour!)

   🌐 www: https://wsn.fb2.frankfurt-university.de/staff/scientific-assistants/

   🌐 Moodle: https://campuas.frankfurt-university.de/course/view.php?id=1599
      (please register)

Student Requirements

- check the topic and prepare for the week accordingly

- attendance is mandatory

- prepare and give a technical talk (**30 min – sharp**)

- Submit a final paper (**4 Pages - exact**)

- read up on the topics and prepare questions for each presentation

1st Goal of Seminar:
Scientific Report Writing --> Paper

Acquire skills in preparing and writing a **scientific report**

- According to standard formats of academic journals and conference proceedings

  - For the seminar use IEEE style and template:

  - https://www.ieee.org/conferences/publishing/templates.html

- Example organizations and **digital libraries**:

📖 **IEEE** (Institute of Electrical and Computer Engineers) is a widely accepted format for writing research papers, commonly used in technical fields, particularly in computer science

📖 **ACM** (Association of Computing Machinery) is a research, discovery and networking platform for computer science

📖 **Elsevier** (website) is an information and analytics company and provider of Physical Sciences and Engineering publications

📖 **Nature** (website) ranked as the world's most cited scientific journal by the *2010 Journal Citation Reports* (impact factor of 38.1)

📖 **scholar.google.de** (website) find papers (not all) of IEEE, ACM, Elsevier and Nature.

Report's General Organization Structure

- Start with the **Title / Author / Abstract / Keywords**:
  - Descriptive information that lets readers search and find the article / report

- Follow the general disciplines of the **I-M-R-a-D** format [15], [16]:

I	**M**	**R**	**a**	**D**
Introduction / background	**Methods / environment**	**Results**	and	**Discussion / elaboration**

Why did you do the study? What questions and what problems were studied? **Background / Literature overview: how does your project fit with other research on this topic?**	**What methods were used? This includes the subjects, the tools, the measures and the analysis, the environment in which the study took place**	**What are the findings? This can also be explained with tables and figures / illustrations**		**What do the findings mean? What is the significance of the project? What can be the future work? What are the open issues?**

Conclusion

References

Special Category: Survey / Review Papers

- Survey and review papers do not report new research but **summarize and organize recent research results in a novel way** that integrates and adds understanding to work in the field.

- A survey article "assumes a general knowledge of the area; it emphasizes the **classification of the existing literature, developing a perspective on the area, and evaluating trends**."

- A survey paper "**should supply the basic knowledge to enable new researchers to enter the area, current researchers to continue developments, and practitioners to apply the results**."

- Reference: ACM Editorial [17]

Template of the Report

- As a template for the report we will use the **IEEE template and Guidelines**
  - Download the Latex Template from the IEEE
    https://www.ieee.org/conferences/publishing/templates.html
  - Read the how to instructions available in the IEEE tamplate
    IEEEtran_HOWTO.pdf
  - There are many different tools to work with latex. Texstudio works across platforms.
    https://www.texstudio.org

- The length of the paper will be <u>**exact 4 pages**</u> of content (sharp) in double column format
  - Papers with more or less than 4 pages of content are not accepted.

- Utilize the **LaTeX** document preparation system for writing your report
  - Link: https://www.latex-project.org/
  - Submit the published PDF file (and the Latex-Project)

Language of the Report

- Your report (written in English) should use technical **formal language**

- Use the 3rd rather than the 1st person or use passive voice when referring to your own work,

- Do not use contractions (don't, doesn't, isn't, can't etc.)

- Do not use the ellipsis punctuation mark (…) or the exclamation mark (!)

- **Explain acronyms** (e.g., WSN) only once, at their first appearance

   E.g.: "A wireless sensor network (WSN) consists of spatially distributed autonomous devices equipped with sensor(s). The data acquired by the WSN are transmitted wirelessly to a central gateway, where measurement data can be processed, analyzed and displayed."

- Proof-read your paper for grammatical and **spelling errors** (no more than 15 spelling mistakes)

Citations and References in the Report

- Everything you include in your technical report should be written **in your own words**

- Ideas, paraphrases of other people's words must be correctly attributed in the body of the paper by **citing** the corresponding work which is included in the last section (**references**)

- Use **quotation** marks in case you need to copy whole exact phrases of other people's work (along with the corresponding citation/reference - do this only rarely

- To use tables and figures from other papers / sources, provide the corresponding citation directly at the legend of the table / figure and add the corresponding reference at the end

- Create your **own tables and figures**, especially with regards to summarizing tables and flow diagrams / charts

- List the references at the end of your report **according to the IEEE guidelines:**

[3] WiMedia Alliance. (2009, Jan.) WiMedia.org - WiMedia Alliance. [Online]. www.wimedia.org/imwp/download.asp?ContentID=15053

[4] A. Athanasopoulos, E. Topalis, C. Antonopoulos, and S. Koubias, "Evaluation Analysis of the Performance of IEEE 802.11b and IEEE 802.11g Standards," in *International Conference on Networking, International Conference on Systems and International Conference on Mobile Communications and Learning Technologies, 2006*, April 2006, pp. 141-146.

[5] B. Celebi, B. Dericiogullari, and Y. Bitirim, "Performance Evaluation of IEEE 802.11b, IEEE 802.11g and GPRS/EDGE Based on Query Retrieval Time," in *Third International Conference on Wireless and Mobile Communications ICWMC '07*, Guadeloupe , March 2007, pp. 66-69.

[6] G. Sohal and L. Dowdy, "Experimental sensitivity analysis of wireless protocols in an office environmen," in *IEEE Wireless Communications and Networking Conference (WCNC 2004)*, 2004, pp. 1353-1358.

[7] M. Eriksson, "A performance evaluation on the use of IEEE 802.11 for long range communication," Masters Thesis, Lulea University of Technology, Lulea, Sweeden, 2005.

[8] A. Matsumoto, K. Yoshimura, S. Aust, and T. Ito, "Performance evaluation of IEEE 802.11n devices for vehicular networks," in *3rd IEEE LCN Workshop on User MObility and VEhicular Networks (ON-MOVE 2009)*, Zürich, Switzerland, October 2009, pp. 669-670.

IoT Scientific References and Sources

- Utilize **scientific resources** as references
  - The FRA-UAS-student account allows access to high-quality digital libraries, e.g.: IEEE, ACM, Elsevier, etc.

- IEEE has a dedicated *IEEE Internet of Things Journal*:
  - http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=6488907

- The proceedings of the following IoT-related magazines & conferences appear in IEEE:
  - *Int'l Conf. on IoT in Social, Mobile, Analytics and Cloud*
    http://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=8039353
  - *Int'l Conf. on Smart and Sustainable City (ICSSC)*
    http://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=8089485
  - *Int'l Conf. on Intelligent Transportation Systems*
    http://ieeexplore.ieee.org/xpl/conhome.jsp?punumber=1000396
  - *IEEE Intelligent Transport Systems Magazine*
    http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=5117645

IoT Scientific References and Sources

- Example: <mark>"A robust pedestrian navigation algorithm with low cost IMU"</mark> (2012 et Li and Wang)

- **Backward Search:** <look into the past>
  Can be found at the end of each paper.
  Chapter Reference.

A robust pedestrian navigation algorithm with low cost IMU
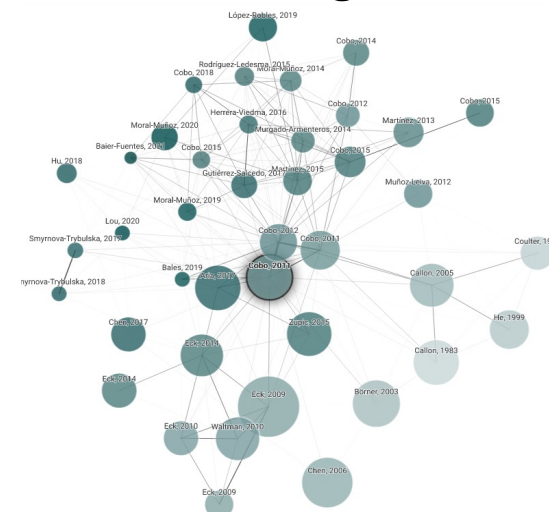Y Li, JJ Wang - … Conference on Indoor Positioning and Indoor …, 2012 - ieeexpl…
Zero velocity update (ZUPT) is an effective way for pedestrian navigation in a GPS
Positioning System) denied environment. The stance phase in each step provides
velocity measurement for IMU (Inertial Measurement Unit) drift correction. Most pre
research, however, gives navigation solutions only for pedestrian walking but not ru
Compared with walking, running has a shorter stance phase with qualified as zero
Therefore a stance phase detector for walking may not be capable for running. This
☆ 🙷 Zitiert von: 30   Ähnliche Artikel   Alle 5 Versionen

Bestes Ergebnis für diese Suche Alle Ergebnisse

- **Connected Papers**: shows in a graph
  the connection to other works.

REFERENCES

[1] S. Godha and G. Lachapelle, "Foot mounted inertial system for pedestrian navigation," Meas. Sci. Technol, vol. 19 2008.

[2] C. Hide, et al., "Low Cost Vision-Aided IMU for Pedestrian Navigation," Global Positioning Systems, vol. 10, pp. 3-10, 2011.

[3] B. Schiele, et al., "Realtime Personal Positioning System for Wearable Computer," presented at the 3rd IEEE International Symposium on Wearable Computers (ISWC 1999), Washington, DC, USA 1999.

[4] S. Y. Cho and C. G. Park, "MEMS Based PedestrianNavigation System",Journal of Navigation, vol. 59, pp. 135-153, 2006.

[5] S. Y. Cho, et al., "A Personal Navigation System Using Low-Cost MEMS/GPS/Fluxgate", presented at the Proceedings of the 59th Annual Meeting of The Institute of Navigation and CIGTF 22nd Guidance Test Symposium, Albuquerque, NM, 2003.

- **Forward Search:** <looks to the future>
  Can be found in digital libraries.

Scientific References Only

- More resources in IEEE's dedicated IoT platform:
  - *IEEE Internet of Things (IoT) Initiative*
    https://iot.ieee.org/articles-publications.html

  - IoT Scenarios: https://iot.ieee.org/iot-scenarios.html
    (*all links Accessed on* 06.04.2018)

- **Do not copy from and cite online material and corporate white papers <u>which have not undergone a peer-review process</u>** and whose content may change over time

- In case that you must use a **weblink** as a reference, do not forget to add the <u>last date when you accessed the link</u>

- Consider the **IEEE guidelines** for further details

2nd Goal of Seminar: Technical Presentation

- Learn and practice how to give a **technical presentation** of your report adhering to certain rules with the aim

  - to inform (e.g., knowledge transfer, classroom instruction) and / or

  - to persuade (e.g., convincing others to adopt a design approach or accept the results of a study / an evaluation process)

- Successfully attend another person's scientific presentation and ask questions (everybody will prepare 2 questions :-)

Presence in the talks of this seminar class is a prerequisite!

Technical Presentation Guidelines

- Each time we meet, two talks take place (one after the other) – *all come in time*

- **Test your setup (Laptop, Microphone, Network, …)**
- **Duration**: **30 minutes** (sharp)
  - The following 5-10 min is time for questions and evaluation
  - Number of slides (questions)
- **Slide contents**: Key words and sentences, graphical displays, pictures
  - Not a copy of your report document
- Do not read the slides or your report, do not memorize the whole speech
- **Speak freely** about the contents and be aware of your dress

Schedule of the IoT Seminar

- **Every Monday two talks take place**
  - Come in time for the course
  - Mandatory attendance !!

- The start of the presentation series could be the (22. Mai.).

- **Submit your exact 4-page report Monday** <u>before your talk</u> to olaf.reich@fb2.fra-uas.de Subject: **"[Topic] + [name] + [matriculation number]"** (format .pdf)

- **Submit your presentation slides after** <u>your talk</u> to olaf.reich@fb2.fra-uas.de Subject: **"[Topic] + [name] + [matriculation number]"** (format like .pptx)

- Submit the Latex-Project to reich.olaf@gmail.com

Question(s)