



Hauptseminar:
Motion Analysis, Learning and Tracking

Loren Schwarz, Diana Mateus, Nassir Navab,

Advanced Seminar Course Module IN8901
Master Seminar Module IN2107
Seminar Module IN0014

CAMP
TUM - I16

Goals of the Seminar

Learn how to:

- Read scientific papers.
 - Do state of the art research on a specific topic.
 - Write a scientific report.
 - Do a presentation on a scientific topic.
-

Scientific Communication

- **Seminar:** Systematically investigate existing scientific literature regarding one specific topic. Summarize and present the most important findings.
 - **During your studies:** Understand and discuss existing literature related to your own thesis (Bachelor's, Master's, Diploma).
 - **Scientific publications (Conference / Journals / Workshops):**
 - Hundreds of conferences and journals on different topics
 - Present your own research and contribution to other researchers
 - Exchange of knowledge, make contacts
 - Confirmation and validation of contributions
-

Related Conferences / Journals

Conferences

- (CVPR) IEEE Computer Society Conference on Computer Vision and Pattern Recognition
- (ICCV) International Conference on Computer Vision
- (ECCV) European Conference on Computer Vision
- (NIPS) Neural Information Processing Systems
- (SIGGRAPH)

Journals

- (PAMI) IEEE Transactions on Pattern Analysis & Machine Intelligence
 - (IJCV) Springer International Journal on Computer Vision
 - (CVIU) Elsevier Computer Vision and Image Understanding
-

Access to Scientific Publications

- Access to the most publications is not free
- Many publications can be accessed for free using the TUM-proxy
- Some places to look for publications:
 - **Google Scholar** <http://scholar.google.de>
 - **Citeseer** <http://citeseer.ist.psu.edu/>
 - **Our library**
 - Books and electronic media...
 - Link to instructions how to access/download electronic media:
<http://www.biblio.tu-muenchen.de/medien/emedien.html>
 - Link to access/download media outside of the campus:
<http://www.lrz-muenchen.de/services/netzdienste/proxy/documentweb/>



In Practice....

In the Seminar

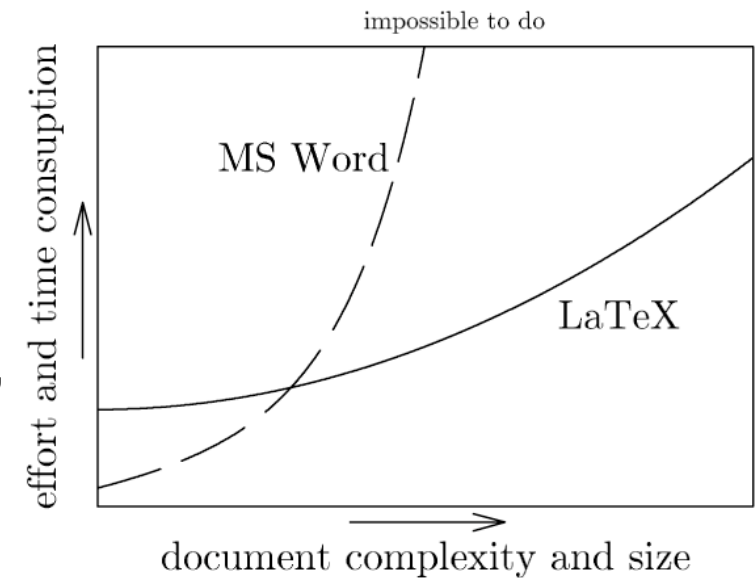
- **SWS:** 2+0
ECTS: 4 Credits
Course Language: English
- Write a handout (max 10 pages, **don't copy and paste!**)
- Discuss the handout and presentation with your supervisor (at least one week before your presentation)
- 30 min presentation / 15 min questions
- Assume your audience does not know your particular topic (so you can introduce it) but has a computer science background
- Attendance of the seminar meetings
 - Participation: read all the abstracts, see figures, read intro and conclusions

Structure of a Scientific Publication

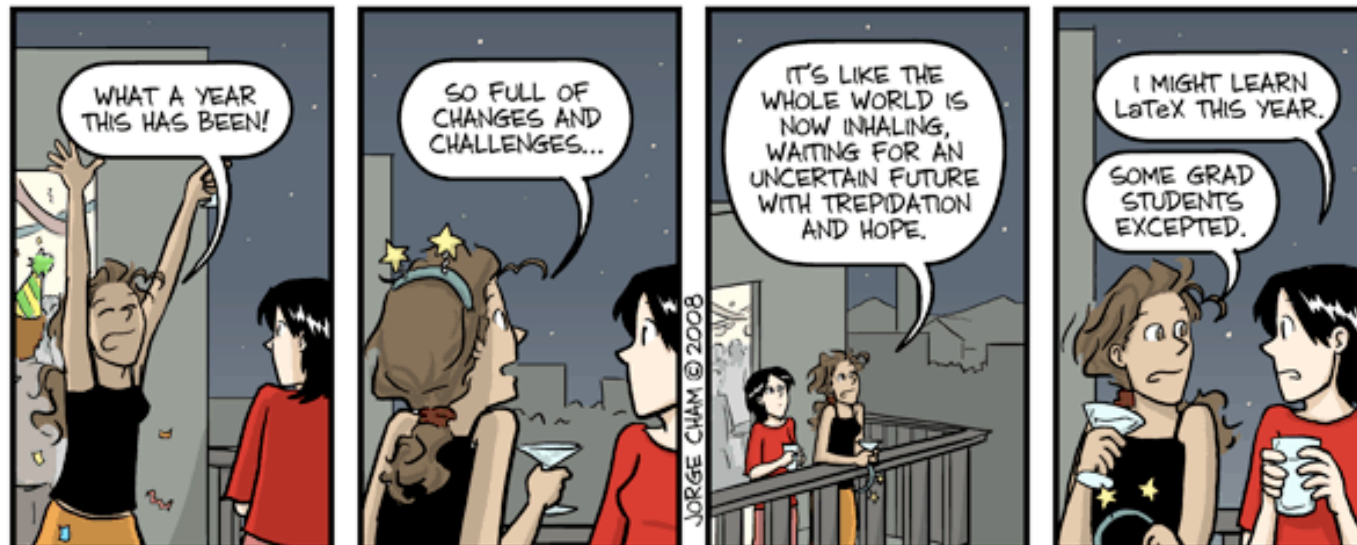
- **Abstract:** This is the part that will be read most often. Has to arouse interest in the reader. Usually the abstract is freely available.
 - **Introduction:** Motivation and related work.
 - **Methods:**
 - Problem statement
 - Exact presentation of the material and of the methods.
 - **Results:** Quantitative values, comparisons.
 - **Conclusion:** Discussion, problems, future work and a summary.
 - **References:** Related work and literature that is important to understand the paper. Everything that has been used to obtain the own results.
-

LaTeX

- Document Preparation System
- Most widely used by mathematicians, scientists, engineers, philosophers, economists and other scholars in [academia](#) and the commercial world, and other professionals [Wikipedia]
- Available free for Windows, Linux and Mac OS
- Editors like <http://www.texniccenter.org/>, <http://miktex.org/>, <http://www.lyx.org/>



[Marko Pinteric]



Contents of the Presentation

- **Context**
 - Type and year of publication: journal, conference, workshop, etc.
 - Community: learning, computer vision, graphics, etc.
 - Authors/Institution
 - State of the art (SoA) (from Introduction and Related Work sections).
 - Name potential applications, general motivation.
 - Citing/Referencing other people's work [Lastname-Conference-Year].
 - **Goal**
 - Problem to solve
 - How it is different from (SoA)
 - **Method**
 - Overview (1 or 2 slides): input, output, contribution.
 - Method/Algorithm.
 - **Results**
 - Type of data used.
 - Validation.
 - **Conclusion**
-

Assigned Presentation Topics

Human Motion Analysis and Tracking

- ① **Adam Włodarkiewicz:** Fossati A., Salzmann M. and Fua P.: Observable subspaces for 3D human motion recovery. Computer Vision and Pattern Recognition (CVPR), 2009
- ② **Babak Gholami:** Ali S. and Shah M.: Floor fields for tracking in high density crowd scenes. European Conference on Computer Vision (ECCV), 2008
- ③ **Denis Bakarassov:** Vlasic D., Adelsberger R., Vannucci G. and Barnwell J.: Practical motion capture in everyday surroundings. ACM Transactions on Graphics (TOG), 2007
- ④ **Ishan Bhattarai:** Lee C. and Elgammal A.: Human motion synthesis by motion manifold learning and motion primitive segmentation. Articulated Motion and Deformable Objects (AMDO), 2006

Human Activity Recognition

- ⑤ **Artashes Mkhitarian:** Morris B. and Trivedi M.: Learning trajectory patterns by clustering: experimental studies and comparative evaluation. Computer Vision and Pattern Recognition (CVPR), 2009
- ⑥ **Elena Erastova:** Tung T. and Matsuyama T.: Topology dictionary with Markov model for 3D video content-based skimming and description. Computer Vision and Pattern Recognition (CVPR), 2009
- ⑦ **Conor Haines:** Weinland D., Ronfard R. and Boyer E.: Free viewpoint action recognition using motion history volumes. Computer Vision and Image Understanding (CVIU), 2006

Object Motion and Tracking

- ⑧ **Manuel de Souza:** Gosch C., Fundana K., Heyden A. and Schnörr C.: View point tracking of rigid objects based on shape sub-manifolds. Computer Vision and Pattern Recognition (CVPR), 2009

Schedule: 4 Sessions (2 students per Session)

- <http://campar.in.tum.de/Chair/TeachingWs09MotionAnalysisSeminar>

