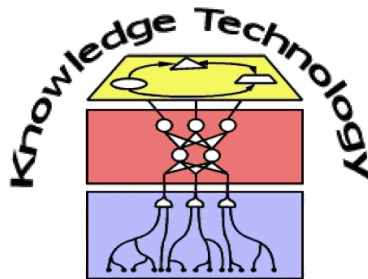


# Knowledge Processing for Intelligent Systems 2015/16

Seminar Organisation

Dipl.-Inform. Stefan Heinrich, Dr. Matthias Kerzel,  
Dr. Cornelius Weber, Prof. Dr. Stefan Wermter



<http://www.informatik.uni-hamburg.de/WTM/>

# What is a Seminar?

- Seminar in general
  - Not a lecture
  - For the audience: **overview** about methods and approaches
  - For the speaker: **deep knowledge** in a specific area
  - Evaluation of recent findings
    - In broad: “Survey”      **or**
    - In depth: „Analysis“
- Side effects
  - Practice reading, writing and presenting
  - Preparation towards seminars and conferences in **research** and industry

# Goal of this Seminar

- Learn more about  
“Knowledge Processing for Intelligent Systems”
  - Extend the lecture by **deepening** specific topics
  - Get an overview about different research directions     **or**
  - Get in contact with a specific implementation
  
- Some skills in scientific methodology
  - Search, learn to read, and **critically evaluate** scientific publications
  - Learn about and structure a complex topic on your own
  - Present the topic comprehensively in a paper and in a talk

# How Can You Reach this Goal?

- Guidance and advice
  - Literature to get started
  - Access to material about how to read, write, and present
  - Links to good resources for literature:  
<http://www.informatik.uni-hamburg.de/WTM/teaching/HintsForSeminars.shtml>
  - Individual talks with an advisor

- Feedback from the Group
  - Reviews
  - Discussions
  - Feedback

The screenshot shows a web browser window with the URL <https://www2.informatik.uni-hamburg.de/wtm/teaching/>. The page header includes the University of Hamburg logo and the text "MIN Faculty Department of Informatics Knowledge Technology". The main content area is titled "Teaching" and "Current semester". It lists various courses (LV) for the Winter Semester 2015/2016, including "Künstliche Intelligenz", "Neuronale Netze", "Bio-inspired Artificial Intelligence", "Knowledge Processing", "Research Methods", and "Human-Robot Interaction". Each course entry includes the course number, type, title, and the responsible professor(s). A sidebar on the left contains a navigation menu with links to Home, Overview, Staff, Teaching, International MSc IAS, Thesis Offers, Seminar Talks, Research Projects, Neuroinformatics, Software, ICAMN 2014, Publications, Books, News and Media, Videos, YouTube Channel, Selected Links, Location, Open Positions, Contact, and Internal Wiki. At the bottom of the page, there are links for "IAF Neuro-Informatics", "International MSc Intelligent Adaptive Systems", "Hints for Seminars and Theses", and "Possible PhD, MSc or BSc research topics".

Teaching			
Current semester			
Winter Semester 2015/2016			
LV 64-124	Proseminar	Künstliche Intelligenz	Heinrich, Magg, Wermter
LV 64-150	Practical tutorial	Neuronale Netze	Weber, Wermter
LV 64-275	Lecture	Bio-inspired Artificial Intelligence	Wermter
LV 64-276	Integrated Seminar	Bio-inspired Artificial Intelligence	Wermter, Magg
LV 64-414	Lecture	Knowledge Processing	Wermter, Weber, Kerzel
LV 64-415	Integrated Seminar	Knowledge Processing	Wermter, Heinrich
LV 64-750	Lecture	Research Methods	Magg
LV 64-751	Integrated Practical Course	Research Methods	Magg
LV 64-466	Master Project	Human-Robot Interaction	Heinrich, Navarro, Twiefel, Weber, Wermter
LV 64-467	Integrated Seminar	Human-Robot Interaction	Heinrich, Navarro, Twiefel, Weber, Wermter
LV 64-487	Group Seminar (Oberseminar)	Knowledge Technology	Wermter

[IAF Neuro-Informatics](#)  
[International MSc Intelligent Adaptive Systems](#)  
[Hints for Seminars and Theses](#)  
[Possible PhD, MSc or BSc research topics](#)

# What Do You Have to Do?

- Provide a paper
  - Survey or analysis based on literature (12 pages) or implementation (6 pages + code)
  - Our paper templates are highly recommended
  - Aim to use recent papers from conferences or journals as background
- Give a presentation
  - 20 min talk + 10min discussion, slide templates recommended
- Participate actively
  - Review two other papers
  - Attend the complete seminar block
  - Discuss the presentations
  - Maintain the deadlines

Work in teams of two is possible:  
20/10 pages  
35+15 min

# Survey vs. Analysis

- **Analysis:** **In-depth** paper on a specific approach
  - detailed description and critical analysis of the approach
  - Critical discussion of this approach compared to other approaches (not mentioned in detail but a literature review should be clearly visible)
- **Survey:** **Comparison** of approaches
  - based on two or more approaches with outline of approaches, focussing on differences
  - In-depth discussion of advantages/disadvantages based on a critical analysis of differences

# Literature- vs. Implementation-based

## ■ Literature-based

- Chain of argument based on literature (results/discussion)
- Critical discussion and own arguments based on composition of results and arguments of main references
- **Requirements: 12 pages content (for teams: 20)**

## ■ Implementation-based

- Focused either on a paper that describes the algorithm in detail or a piece of available and understandable code
- Critical discussion of algorithm, including e.g. limits, possible application domains, complexity, scalability, etc.
- Comparison to results of other approaches (referenced)
- **Requirements: 6 pages content (for teams: 10) + code**

# Criteria to Pass the Seminar

- Seminar is a “Studienleistung”  $\Rightarrow$  No grade, just a “pass”
- We check for:
  - Seminar paper:
    - Topic is covered comprehensively
    - Presented in scientific standards and reasonable quality
    - Shows a **critical elaboration** of the topic **or** implementation
  - Seminar presentation:
    - Reasonable quality of the talk, the slides, and organisation
    - Shows **comprehensive** understanding of the topic in talk & discussion
  - Active Participation
    - Compliance with deadlines
    - Peer reviews
    - Participation in the seminar presentations (including the discussions)
- For a “pass” of the seminar, all aspects need a “pass”



# Typical Structure of Survey Seminar Paper

- Seminar papers evaluate other papers
  - Research recent and/or complementary approaches to solve an open problem
  - Focus on a critical comparison, not on an own contribution
- Suggested structure:
  - Title + Abstract
  - Table of Contents
  - Introduction: What is the research question / problem
  - Background / Related Work (if necessary)
  - Evaluation of Approaches A, B, C,...
  - Critical Discussion
  - Conclusion, Outlook
  - Bibliography

# Typical Structure of Analysis Seminar Paper

- Seminar papers reports on own experience with a method
  - Implement or understand available small core algorithm
  - Run tests for strengths, weaknesses, and limits of algorithm
  - Focus on own contribution, critical compare with original paper
- Suggested structure:
  - Title + Abstract
  - Table of Contents
  - Introduction: What is the research question / problem
  - Detailed Description of Approach X and its Implementation
  - Critically report your own Results
  - Discussion, Conclusion, Outlook
  - Appendix: (own) code in readable/commented form
  - Bibliography

# A Few Words on Referencing

- Most important quality in research: scientific integrity
  - Usually you base your chain of argument on arguments and ideas of others
  - Cite idea, source code, or material
  - Quote copied text from research papers
  - Avoid long or too many quotes
  - Follow citation guidelines!
- How do I recognise a good reference?
  - Trustworthy, reviewed, easily accessible, unchanging
  - Good: Reviewed articles, books, edited collections, ....
  - Bad: Personal communication, blogs, news articles, Wikipedia

More details in:

- “Hints for seminar”
- BAI seminar introduction

# Seminar Topics

- List of topic can be found in the CommSy
  - Always provides one or more papers as a start
  - Has an advisor attached to it
  
- You can choose a topic of your own by
  - sending me a topic name and short description of focus including starting literature
  - getting assigned a suitable advisor

# Your Next Steps

- Till next week:
  - Join the MIN-CommSy room
  - Choose the topic (3 preferences, prioritised) by email  
⇒ **heinrich@informatik.uni-hamburg.de**
- In the next four weeks:
  - **Read** the initial material & **search** for more
  - **Organise** the topic:
    - Divide important from unimportant content
    - Structure the content
    - Use the help of the advisor!
- **Before Christmas break:**
  - Write a draft of your paper
  - Review two other draft papers

# And the Further Steps

- After Christmas:
  - Use the reviews you got to improve your own paper
  - Prepare slides
- At the end of the lecture period:
  - Deliver your final paper and your slides
- After lecture period:
  - Give a presentation
  - Support the other participants with discussion and feedback

# Seminar Presentation

- **As a conference block**

- After the lecture period
- 3 days full of presentations
- Each presentation ~20mins + 10mins discussion/feedback
- Exact dates will be fixed when exam dates are out
  - You need to attend the full conference
  - Current plan: Forth week of lecture-free period
  - Dates will be proposed by eMail / MinCommsy

# Milestones and Deadlines

- Week 2 (20.10.): Choice of topic
- Week 5 (10.11.): Literature/Software report, paper outline
- Week 9 (16.12.): **Paper draft**
- Week 10 (06.01.): Submission of reviews
- Week 13 (19.01.): **Paper (final version)**, Slides (draft)
- Day before a conference: **Slides (final)**
  - **Deadlines are always at 18:00 by eMail to me and advisor!**
  - **All submissions except reviews as PDF**
  - **Please use prefix [KPIS] for eMail subject**



Thank you for your attention.  
Any questions so far?

- WTM website:  
<http://www.informatik.uni-hamburg.de/WTM/>
- MIN-CommSy:  
<https://www.mincommsy.uni-hamburg.de/commsy.php?cid=8009605>
- Hints:  
<http://www.informatik.uni-hamburg.de/WTM/teaching/HintsForSeminars.shtml>
- Email for seminar issues:  
heinrich@informatik.uni-hamburg.de