

Computational Neuroscience: Neural Dynamics

Gregor Schöner

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Language

- slides will be in English
- lectures will be in English
- ask questions in German and ask for clarification of terms

Who am I

- theoretical physicist by training, but working in theoretical neuroscience/ cognitive science and motor control for over 20 years
- second life as a roboticist/computer vision person
- way stations: Saarbrücken, Stuttgart, Boca Raton Florida, Bochum, Marseille, Bochum...

What am I?

- Chair Theory of Cognitive Systems
- Director of the Institut für Neuroinformatik
- joint appointment in the Faculty of Physics and Astronomy and in the Faculty of Electrical Engineering and Information Technology

My research

■ research in two related areas

■ embodied cognition: motor control, movement planning and representation, decision making, action and spatial memory, visual working memory, perceptual representations, motion perception

■ autonomous robotics: vehicles, manipulators, man-machine interface, object recognition, behavioral organization, learning

■ based on the theoretical approach of “DST” (dynamical systems theory) and “DFT” (dynamical field theory)

Oliver Lomp

- will run the exercises
- also available for questions etc.
- Oliver.Lomp@ini.rub.de
- is a AI master himself, now doctoral student at INI
 - developer CEDAR framework
 - higher cognition and perception in DFT

Would you present yourself, please?

- Name

- which discipline

- which semester

- taking this course

- as course in Angewandte Informatik Master program

- as “nicht-X Nebenfach”

- as “Vertiefungsfach”

- for fun...

Would you please send an email
to oliver.lomp@ini.rub.de

- with your name
- Matrikelnummer
- Studiengang and -semester, PO
- (use the email address that you are going to use throughout)

Exercises

- hand-outs ... hand-ins!
- will be corrected and discussed by Oliver Lomp
- there will be readings, to which exercise sheets will be directed
- there will be an essay, a longer exercise sheet requiring writing organized longer text
- there may be opportunities to do projects... for bonus points

Rules for the lecture course "Computational Neuroscience: Neural Dynamics"

1. All exercise sheets and reading assignments need to be turned in at the agreed time, usually the week after they have been given out. This is part of the requirement to obtain credit.
 - Late delivery is accepted only if announced ahead of time with an excuse. Send an email to me or to `oliver.lomp@ini.rub.de`.
 - You may drop a total of 2 assignments maximum, but not the essay.
2. Your solutions to exercises and assignments should be written in English or German, using complete sentences.
 - Structure your answers intelligently, first explaining assumptions and conventions.
 - Make drawings whenever useful.
 - If you use mathematical formalism, define your variables.
3. There will be one *essay* assignment, in which you will be asked to produce a longer text (a couple of pages) to discuss an issue based on a scientific article, which you will have to read.

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4. Fulfillment of the exercise/assignments requirement is a prerequisite for passing, so participation in the final exam alone is not sufficient to pass.
5. There will be a written exam at the end of the lecture course.
6. The final mark is composed of the mark in the exam with a weight of $\frac{2}{3}$ and the average of the best 5 exercises (which may include the essay) with a weight of $\frac{1}{3}$. The exercises enter only if they improve the mark. Otherwise, the final mark is the mark obtained in the exam.

Web info

- all slides, exercises, and this rule sheet are available on the web:
- http://www.ini.rub.de/teaching/courses/neural_dynamics.html.en

Schedule

- every thursday 14:15 to 16:00
- exercise from 16:15 to 17:00