EBERHARD KARLS
UNIVERSITÄT
TÜBINGEN

FACULTY OF
SCIENCE
Department of Computer Science

Seminar SS 2016

Machine Learning and Artificial Neural Networks in Biomedical Applications

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Milestones

- **Today:** kick-off meeting
  - General information
  - Presentation of topics
  - Choose your topics
  - First meeting with supervisor

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Milestones

- Today: kick-off meeting
  - General information
  - Presentation of topics
  - Choose your topics
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- June: outlines of presentation and written report
- **Week before presentations**: rehearsel presentation and first report
- July 8th, 15th (Fridays) : presentation sessions
- July 22nd: final written report

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What we expect

- Overall object: learn scientific/academic workflow
- Work independetly 20 %
  - Research your topic
  - Find, read and understand relevant papers
  - Select what to present
- Regularly meet with your supervisors, they'll help you
- Written report 30 %
  - English, scientific style, 15-20 pages, Latex template
  - draft – feedback – final version
- Presentation 50 %
  - English, 20 minutes + 10 minutes discussion
  - Content, form, presentation skills

No Plagiarism! Don‘t cheat!

Student submission:

Nevertheless, artificial intelligence showed that, nowadays, robots and machines have problems even remotely approaching human perceptual possibilities, apart from some highly domain-specific scenarios.

Original paper:

However, artificial intelligence has shown that, apart from some highly domain-specific scenarios, to this day, machines and robots have difficulties even remotely approaching human perceptual abilities.

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Use your own words!

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Topics

1. Machine Learning and decision support in critical care
2. Improvement of patient monitoring alarms by using machine-learning techniques
3. Predicting and Improving Recognition Memory Using EEG
4. Efficient mental workload estimation using task-independent EEG features
5. Quantifying Cortical EEG Responses to TMS in (Un)consciousness
6. High-speed spelling with a noninvasive brain–computer interface
7. Restoring cortical control of functional movement in a human with quadriplegia
8. Real-Time Control of a Neuroprosthetic Hand by Magnetoencephalographic Signals from Paralysed Patients
9. Spiking neural controllers in multi-agent competitive systems for adaptive targeted motor learning
10. Unsupervised learning of digit recognition using spike-timing-dependent plasticity
11. Mastering the game of Go with deep neural networks and tree search

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