Doing by Thinking...

Proseminar: Introduction to the Functional Decoding of Brain Signals

Seminar: Invasive and Non-Invasive Methods to Decode Brain Signals in Realtime

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www.bsdlab.uni-freiburg.de/teaching/sose18
Application that uses decoded brain signals:
Spelling application:

DIE_GEDANKEN_SIND_FREI_
Play a chess game using visual attention:
Application that monitors mental workload:
Brain-Computer Interface (BCI)

- measures brain activity
- decodes brain activity with machine learning methods
- influences / drives an application using the decoded information
Types of tasks?

1. focus of attention to one of several *external stimuli* (visual, auditory, haptic, ...)

2. *self-initiated* mental imagery tasks (motor imagery, calculation, navigation...)
Examples of EEG recordings

Transient potentials

Oscillations
Types of tasks?

1. focus of attention to one of several *external stimuli* (visual, auditory, haptic, ...)

2. *self-initiated* mental imagery tasks (motor imagery, calculation, navigation...)
Role of machine learning in BCI?
Requirements

- Mai 17: Provide your supervisor with a 2-page resumé (commented table of contents)
- One presentation per topic: ~45 min (30+10+5)
- Active participation in discussions
- One seminar report per topic: 10 pages
Schedule (I)

• Matching student ↔ topics: today

• Meet your supervisor, pick up initial materials (end of week)

• “How to give a presentation” - by Prof. Burgard (date tbd)

• Hand in your resumé to your supervisor by May 17, 2017 (no continuation if this deadline is missed)

• Few individual meetings with your supervisor to get your presentation into good shape
Schedule (II)

- Every topic is presented during **1 or 2 full days** (June/July) (we expect every student to attend both sessions)
- Your reports are due: **1 week after the last presentation session** (we expect that you process & include feedback received after your presentation)
- You receive feedback on your report via your supervisor
Grading

- **60%** presentation
- **30%** written report
- **10%** contribution in discussions
  
  (Giving and receiving feedback after presentation will be practiced)
Topics

→ Quick glance on topics
→ Distribution of topics

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