

## Bachelorarbeit

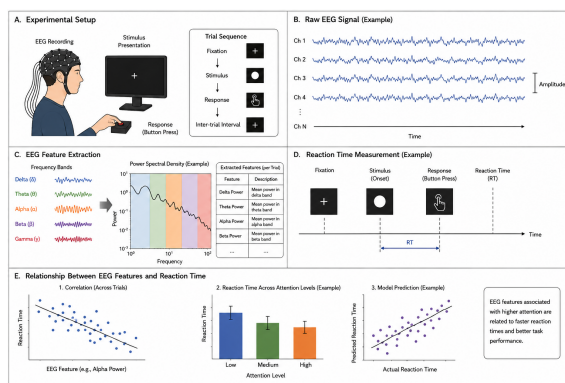
# EEG-Based Attention and Reaction Time Analysis During Cognitive Tasks

### Motivation

Attention level and reaction time are strongly related to human cognitive performance. During tasks such as gaming, solving math problems, or puzzles, the brain shows different activity patterns, and the speed of response may change depending on mental workload. This project aims to study how EEG features can reflect attention changes and how these changes are related to reaction time.

### Key Concept

The system records EEG signals while the participant performs different tasks. At the same time, visual or auditory stimuli are presented, and the participant's reaction time is measured using a button or keyboard response. EEG features such as alpha and beta band power are extracted and compared with reaction time values to investigate the relationship between brain activity, attention, and task performance.



EEG

### Prior knowledge

- Experiences with Python programming
- Basic knowledge of signal processing techniques
- Basic knowledge of machine learning and statistics

### Research area

- Signal processing
- Neuroscience
- maschinelles Lernen

### Studiengang

- Elektro- und Informationstechnik
- Informatik
- Mechatronik
- Medizintechnik

### Alignment

- Method development
- Research
- Implementation
- Modelling

### Start

Immediately

### Duration

3 Months

### Links

[Mitarbeiter](#)

### Contact person

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