Universität Stuttgart

FaPra: Computational EEG analyses

I am interested to develop **computational methods** for **EEG** analysis. These methods have very broad applications, enabling accurate EEG analyses from simple laboratory experiments, to complex real-world or VR EEG studies.

Recently, the **Julia** programing language gained lots of traction due to its well-designed syntax, integrated reproducible packet-management and because it appears to solve the 2-language problem (Julia is as easy as python, but (nearly) as fast as C). Due to the computational complexity, but also the necessary scientific flexibility, many researchers switch to Julia. Therefore, all implementations in this FaPra will be done in Julia.

I propose several projects for 1-3 students each, I am also open for own ideas. Students will work on the problems under my supervision. The projects typically touch upon: **machine learning, timeseries / data analysis, visualization, statistics, methods evaluation, science-communication.**

I will meet with each group for 30min / week or 1h / 2 weeks in a structured meeting if necessary, to discuss issues and provide help. In addition, we can discuss issues via email/github issues. In case of low number of interested students, individual plans can be made.

In addition, we will all meet every two weeks for a group-discussion, updating each other on the progress being made. This will involve short presentations of each group of 10min each.

The grade consists of:

- 20% Interactions & Presentation Skills
- 30% Implementation Code & Documentation
- 50% Report (up to 8 pages)

The report can be structure as a typical conference paper.

If you are interested in specifics, I am happy to send you the project descriptions. Contact me: benedikt.ehinger@vis.uni-stuttgart.de