

Decoding Cognitive Workload: A Passive BCI Hackathon

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Abstract / Short description

Passive brain-computer interfaces (pBCI) are used to monitor mental states, such as emotions and cognitive workload, while users engage in various tasks. pBCIs can be employed in operational environments for real-time evaluation and adaptation of task requirements to users to improve their experience and performance.

This hackathon intends to advance developments in pBCIs using state-of-the-art signal processing techniques and machine learning algorithms. Participants will be provided with an EEG dataset and will compete in groups to create the best-performing prediction model of cognitive workload. At the end of the hackathon, the groups will present their work to a jury. The winning group will receive a small prize.

Besides improving programming skills, this hackathon will provide participants with the opportunity to network with likeminded people in approximately the same stage of their career, as well as the mid-career mentors that will help out during the hackathon.

Keywords

Hackathon, passive brain-computer interface (pBCI), EEG, workload, machine learning.

Prerequisites

Participants may be junior or early-career researchers ideally with some experience in (EEG) signal processing and programming (MATLAB, Python). We specifically welcome PhD and master's students who are attending the conference.

Tentative Schedule for two 4-hour sessions:

The hackathon will kick off on the afternoon of Monday, July 8th, and will wrap up on the morning of Tuesday, July 9th.

Day 1

Decoding Cognitive Workload: A Passive BCI Hackathon	
1:00pm	Welcome and introduction, incl. a brief talk and group formation
2:00pm	Start of Hackathon – day 1
4:45-5:00pm	Official Conclusion of day 1

5:00pm- ...	Groups may continue to work on their projects if they like on their own time
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Day 2

Decoding Cognitive Workload: A Passive BCI Hackathon	
9:00am	Start of Hackathon – day 2
11:20am	This deadline is the time at which all teams should have sent their slides with their final results to the committee. This will avoid any order of presentation affecting the outcome as the teams presenting could have an unfair advantage if still allowed to modify their projects/presentation.
11:30am	Final presentations (7min presentation + 3min Q&A for each group)
12:30-12:45	Jury deliberation
12:45pm- 1:00pm	Award session & conclusion