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Computational Cognitive Neuroscience

Instructor

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Department: Computer Science and Automation

Course Time:

Lecture venue:

Detailed Course Page:

Announcements

Brief description of the course

The course is meant for graduate (PhD) and advanced masters and undergraduate students. The goal is to review the state-of-the-art in applying computational approaches to address cognitive neuroscience research problems. The course entails readings every week and .

Prerequisites

Introduction to basics of neuroscience and machine learning.

Syllabus

Overview of computational techniques in brain research; Machine learning and classification in brain research; Dimensionality reduction in brain research; Neural computation and Theory; Deep convolutional neural networks

Course outcomes

There is an emerging need for computational frameworks that permit extracting meaningful information from noisy, high-dimensional brain data. The students will review the state-of-the art in machine learning and dimensionality reduction as well as theoretical and computational models in brain research. The course project

will train them to develop and apply computational algorithms to large-scale neuroscience datasets, for example, for decoding cognitive states from brain imaging data.

Grading policy

Class readings - 50%

Mid-term assignment - 20%

Final project - 30%

Assignments

Resources