CS-702

Topics in Machine Learning for Education

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Cursus	Sem.	Type
Computer and Communication Sciences		Opt.
Learning Sciences		Opt.

Language of teaching	English
Credits	2
Session	
Exam	Oral
Workload	60h
Hours	**28**
Courses	28
Number of positions	**30**

Remark

Not offered this year

Summary

This seminar course covers the interdisciplinary field of machine learning for education. By reading, reviewing, and presenting research papers from recent venues, students will become familiar with core issues and techniques in the field

Content

Computer-based learning environments such as intelligent tutoring systems, educational games, and interactive simulations yield large amounts of data, which can be analyzed to gain new insights into human learning. Traditionally, students' learning behavior and strategies has primarily been studied by learning scientist using instruments such as surveys or one-to-one interviews. The data sets collected by digital education allow for performing this research at scale, requiring computational approaches to thinking and analyzing about them.
Computer-based learning environments furthermore provide the opportunity to also offer individualization at scale: the users of educational systems are often very heterogeneous and therefore it is important to adapt to their specific needs and preferences.

The goal of this seminar is to familiarize students with the fundamental questions, issues, and core techniques in the fields of machine learning and artificial intelligence in education. The course is held as an advanced seminar, where original research papers have to be critically reviewed, presented, and discussed. Every week, we will focus on one research topic (read research paper and sometimes additional complementary materials). All students will write a short summary and review of the respective paper(s), and one student will present the paper in the class.

Beyond familiarizing themselves with research in the field, students will become better at assessing and critiquing scholarly work (by discussing and reviewing papers). Furthermore, the students will learn how to structure a scientific presentation in English.

Keywords

Educational data mining, user modeling, simulation, human learning, machine learning

Learning Prerequisites

Required courses

No formal prerequisites, but students are expected to have a basic understanding of statistics, probabilities, and machine learning

Learning Outcomes

By the end of the course, the student must be able to:

- Critique scientific papers
- Present other scholar's work
- Assess / Evaluate positive aspects of given scientific papers
- Identify negative aspects of given scientific papers

Resources

Moodle Link

- https://go.epfl.ch/CS-702