

CS-727

Topics in Computational Social Science (TopiCSS)

West Robert

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

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

Frequency

Every year

Remark

Next time: Spring 2024

Summary

This is a seminar course. By reading and discussing an introductory book as well as research papers about computational social science, students will become familiar with core issues and techniques in the field.

Content

Data collected through digital systems, such as online social networks, search engines, mobile phones, apps, etc., offer great opportunities for addressing important research questions about individual as well as collective human behavior. Whereas such issues had previously been studied primarily by social scientists, the sheer size of modern social data sets, as well as the fact that they are produced within computational systems, requires computational ways of thinking about, and processing, them. Moreover, such data is often messy and confounded, as it is collected from the real world taking its natural course, rather than under clean experimental conditions. This makes it challenging to draw valid conclusions about cause and effect from such data, unless one proceeds carefully.

The goal of this seminar is to acquaint students with some of the fundamental questions and techniques arising in the context of computational social science, with a focus on research design and causal inference from messy data.

We will explore the above topics simultaneously in two ways:

- We will read a textbook on causal inference for social science (most likely "Causal Inference: The Mixtape" by Scott Cunningham, available online for free).
- We will read research papers from computational social science that provide a deep dive into the topics discussed in the book.

Every week, we will focus on one portion of the book or on a research paper where the previous week's book materials are applied in practice. All students will write a short summary and review of the respective materials, and one student will lead an in-class discussion. Beyond familiarizing themselves with the methods and research questions in the field, students will become better at assessing and critiquing scholarly work (by discussing and reviewing papers). Through this course, students will obtain an overview of the research designs and methods used in computational social science, and will encounter a series of papers based on them. Moreover, they will increase their ability to summarize and critique scientific papers.

Keywords

Computational social science, research design, causal inference, observational studies, drawing causal insights from messy real-world data

Learning Prerequisites**Required courses**

No formal prerequisites, but we expect students to have a basic understanding of statistics and probabilities

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

Bibliography

Previous editions: <https://dlab.epfl.ch/teaching/>