



263-5156-00

Beyond i.i.d. Learning: Causality, Dynamics, and Interactions
(Fall 2021)

Seminar Website

All information concerning the seminar: announcements, class facts, information about exam, etc.

<https://beyond-iid-learning.xyz/>

Please check regularly. Announcements are only made on the website.

Description

Contents: The seminar will be divided into two parts. The first part summarizes the basics of statistical learning theory, game theory, causal inference, and dynamical systems in four lectures. This sets the stage for the second part, where distinguished speakers will present selected aspects in greater detail and link them to their current research.

Notes/Recordings: The class notes from the first part of the seminar will be made available online. The recordings of the talks in the second part of the seminar will be made available through the ETH multimedia portal.

Prerequisites: BSc in computer science or related field (engineering, physics, mathematics). You should have passed at least one learning course, such as “Introduction to Machine Learning” or “Probabilistic Artificial Intelligence”.

Requirements: Attendance is required. Each seminar is based on an article or book chapter, which we will be made available on the course website. Please read it carefully before attending the seminar. Each Wednesday, the material for the following week will be uploaded to the course website.

Schedule

#	Date	Topic
-	Sept 22	<i>No material</i>
1	Sept 29	A brief overview of statistical learning theory
2	Oct 6	A brief overview of game theory
3	Oct 13	Introduction to causality
4	Oct 20	New results in adaptive decision-making
5	Oct 27	A brief overview of dynamics and control
6	Nov 3	Chris Russell (Amazon)
7	Nov 10	Constantinos Daskalakis (MIT)
8	Nov 17	Nathan Kutz (University of Washington)
9	Nov 24	Georg Martius (Max Planck Institute for Intelligent Systems)
10	Dec 1	Dominik Janzing (Amazon)
11	Dec 8	Lester Mackey (Stanford, Microsoft Research)
12	Dec 15	Manuel Gomez Rodriguez (Max Planck Institute for Software Systems)
13	Dec 22	Exam

Class Facts

Instructors	Michael Muehlebach, michaelm@tuebingen.mpg.de Bernhard Schölkopf, bs@tuebingen.mpg.de Andreas Krause, krausea@ethz.ch
Teaching Assistants	Maximilian Mordig, maximilian.mordig@tuebingen.mpg.de Timothy Gebhard timothy.gebhard@tuebingen.mpg.de
Seminar	Wednesdays, 16:15 to 18:00, live Zoom meeting Meeting ID: 621 4380 8058
Office hours	By appointment (please send an e-mail to the teaching assistants)
Exam	Multiple choice exam in the last week of the semester covering all the presentations (pass/fail) We will make some example questions available on the course website.
Repetition	Repetition is only possible after re-enrolling.
ECTS Credits	2KP