MATH-806

Reliable ML: from LLMs to cyber-physical systems

Kuhn Daniel

Cursus	Sem.	Type
Mathematics		Opt.

Language of teaching	English
Credits	2
Session	
Exam	Project report
Workload	60h
Hours	**26**
Courses	20
Exercises	3
TP	3
Number of positions	**30**

Frequency

Only this year

Remark

Registration via https://reliable-ml.github.io/

Summary

Interacting systems ranging from biological networks and social webs to critical infrastructures like power grids pose distinctive modeling challenges. The school presents the reliable machine learning approaches fundamentals and state-of-the-art methods to tackle problems across application domains

Content

Interacting systems - ##ranging from biological networks and social webs to critical infrastructures like power grids - ##pose distinctive modeling challenges. Unlike many physical systems with well-established governing equations, most interacting systems lack explicit dynamical laws, making data-driven modeling or machine learning essential. Yet, standard machine learning methods often break down under distribution shifts or high noise, and struggle to provide reliable predictions in the face of unexpected or rare scenarios. The aim of this summer school is to address core questions related to reliable learning under noise, distributional shifts, uncertainty and beyond. The lectures will be given by an outstanding panel of speakers from academia (ETHZ, EPFL, MIT, Northwestern) and industry (Apple, DeepMind, Isomorphic Labs, ...).

Note

August 31 - September 3, 2026, ETH Zürich
Fees: 150 CHF for PhD candidates / 50 CHF for Master students
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Keywords

Reliable AI, Robustness, Uncertainty Qunatification, Energy Systems, Biological Systems, LLMs

Resources

Websites

- https://reliable-ml.github.io/

Moodle Link

- https://go.epfl.ch/MATH-806