Causality
Course Overview

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Course overview

Session 1 Friday 24 November - course (C. Assaad)
Introduction to causal graphical models
Causal discovery: constraint-based

Session 2 Friday 01 December - course (C. Assaad)
Causal discovery: score-based and noise-based

Session 3 Friday 08 December - lab (E. Devijver)
Lab on graphs
Lab on constraint-based causal discovery (0.25)

Session 4 Friday 15 December - course (C. Assaad)
Causal reasoning: back-door and front-door
Causal reasoning: do-calculus

Session 5 Friday 12 January - course (E. Devijver)
Estimation
Counterfactuals

Session 6 Friday 19 January - course (E. Devijver)
Causal representation
Lab on Estimation (0.25)

Course overview

Session 7 Friday 02 February - final exam (0.5)

Elements (labs + final exam) in orange are graded (the coefficient is given in parentheses)

Dot not forget your laptops for lab sessions!

All materials will be available on the following website:
`https://ckassaad.github.io/MSIAM_Causality_2023.html`

Requirements for labs

- Python3
- Jupyter Notebook

- Packages
    - numpy
    - pandas
    - scipy
    - networkx
    - matplotlib
    - itertools

Research opportunities about causal inference

Internships

- ▶ Causal discovery
- ▶ Causal reasoning
- ▶ Counterfactual reasoning
- ▶ ...

PhD proposals:

- ▶ Causal structures and representations for complex data tasks
- ▶ Causal inference in uncertain environments
- ▶ ...