UNIVERSITÀ
DI PAVIA

Ph.D. Program in Electronics, Computer Science and Electrical Engineering

PhD Course

Probabilistic Graphical Models and Causal Inference

Prof. Marco Piastra

Course Description

Graphical models can be used to represent causal assumptions that researchers may wish to convey and defend. As such, they can also be used to identify under which conditions causal features can be identified starting from probability distributions obtained from factual observations. In turn, these methods can be applied to estimate the effects of specific interventions and to study counterfactuals, namely, how a specific situation could be different under altered circumstances. In the realm of machine and deep learning, causal reasoning via graphical models is becoming increasingly relevant in relation to explainability, bias detection and fairness assessment.

The objective of this short course is giving a brief account of theoretical foundations, describing basic computation methods, with a few practical examples.

The concluding assessment, for PhD students, will encompass the implementation of a small-scale project. The project will be agreed upon beforehand and its results will be exhibited and discussed afterwards.

Schedule

Three episodes, two hours each:

- Thursday, 23 May 2024: from 4pm to 6pm, Magenta Seminar Room, D Floor
- Thursday, 06 June 2024: from 4pm to 6pm, Magenta Seminar Room, D Floor
- Thursday, 13 June 2024: from 4pm to 6pm, Magenta Seminar Room, D Floor

CREDITS: 2,2 CFU

Please send an email to alice.albini@unipv.it to enroll in the course and get information. Students who are notcurrently in Pavia can request to attend all the lessons online.

Ph.D. Coordinator

Prof. Ilaria Cristiani