Graphical Models
Discrete Inference and Learning

MVA

$2024 - 2025$

http://thoth.inrialpes.fr/~alahari/disinflearn

Lecturers

Karteek Alahari

Demian Wassermann

Email: <firstname>.lastname@inria.fr

Organization

- 7 lectures of 3 hours each
  - Today + 28/1, 4/2, 25/2, 11/3, 18/3, 25/3

- 13:45 – 17:00 with a short break or two

- Last lecture: 25th March

- Subscribe to the mailing list:
  https://sympa.inria.fr/sympa/subscribe/grmdil

Requirements

- Solid understanding of mathematical models
  - Linear algebra
  - Integral transforms
  - Differential equations

- Ideally, a basic course in discrete optimization

Topics covered

- Basic concepts, Bayesian networks, Markov random fields

- Inference algorithms: belief propagation, tree-reweighted message passing, graph cuts, move-making algorithms, Parameter learning

- Deep learning in graphical models, graph neural networks, other recent advances

- Causality

Evaluation

- Projects

- In groups of at most 3 people

- Report and presentation – Dates TBD (last week of March)

- Topics: your own or see list next week

What you will learn?

- Fundamental methods

- Real-world applications

- Also, pointers to using these methods in your work

Your tasks

- Following the lectures and participating actively

- Reading the literature

- Doing well in the project