

PROBABILISTIC MODELLING AND BAYESIAN NETWORKS

TOPICS

- 1.- Basic concepts: Introduction to probability (intuition and interpretation). Conditional probabilities. Chain rule. Bayes rule. Independence and conditional Independence. Information theory. Entropy. Mutual Information.
- 2.- Unidimensional modeling: Parametric modeling. Parameter estimation. Semi-parametric modeling. EM algorithm. Non-parametric modeling. Kernel density estimation.
- 3.- Statistical testing: Procedures. Type I and II errors. Interpretation. Multiple testing. Parametric vs. non-parametric tests.
- 4.- Bayesian Networks: Joint probability factorisation. Structural learning. Parameter estimation. Applications.

BIBLIOGRAPHY

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Neapolitan, R., (2004) Learning Bayesian Networks, Prentice Hall.

Pourret, O., Naïm, P., Marcot, B. (2008) Bayesian Networks: A Practical Guide to Applications, Wiley.

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