

Machine learning and data mining 2

Introduction

Radim Bělohlávek



DEPARTMENT OF COMPUTER SCIENCE
PALACKÝ UNIVERSITY, OLOMOUC



- Advanced methods of machine learning and data mining
- Methods considered very practical and fundamental
- Mathematics preliminaries: probability and statistics, linear algebra, discrete mathematics



Areas to be examined

- Matrix decompositions
- Factor analysis and related
- Bayes networks
- Statistical testing of hypotheses (?)

- factor analysis
 - R. P. McDonald: Factor Analysis and Related Methods. Lawrence Erlbaum, Hillsdale, NJ, 1985.
 - P. Kline: An Easy Guide to Factor Analysis. Routledge, London, 1993.
- matrix decompositions
 - D. Skillicorn, Understanding Complex Datasets. Data Mining with Matrix Decompositions. Chapman & Hall/CRC, Boca Raton, FL, 2007.
 - L. Eldén: Matrix Methods in Data Mining and Pattern Recognition. SIAM, 2007.
 - M. Hladík: Lineární algebra (nejen) pro informatiky. MatfyzPress, Praha, 2019.
 - L. Barto, J. Tůma: Lineární algebra. Skriptum MFF UK, https://www2.karlin.mff.cuni.cz/~barto/LinAlg/skripta_la6.pdf.
- Bayes networks
 - R. Kruse, C. Borgelt, C. Braune, S. Mostaghim, M. Steinbrecher: Computational Intelligence: A Methodological Introduction. 2nd ed. Springer, 2016.
- statistical testing of hypotheses
 - standard topic, many sources