Location: KHE323 (Lecture Room) KHW379 (Lab Room)
Monday 2017-01-16, 6:00-9:00 PM

Date	Topics	Assignments + Lab
2017-01-16	Data Mining • Predictive Modeling • Prescriptive Analytics	Reading: IDM 1 HW:
2017-01-23	Revisit of ML • Linear Algebra • Matrix Decomposition • SVD, PCA, ICA • Factor Analysis	Reading: DL 1, R3 HW:
2017-01-30	Graphical Models • Bayesian Networks • Hidden Markov Models	Reading: ML 14, 15 HW:
2017-02-06	Reinforcement Learning	Reading: ML 18, R5 HW:
2017-02-13	Model Assessment and Evaluation	Reading: ML 19, IDM 4 HW:
2017-02-20	Winter Study Week	
2017-02-27	Visualization for Knowledge Discovery	Reading: VT 7,8,9, R7 HW:
2017-03-06	Mid Term	
2017-03-13	Cluster Analysis • Agglomerative • Hierarchical • Fuzzy Boundaries	Reading: IDM 8, HW:
2017-03-20	Association Rule Mining • Apriori Algorithm • FP Tree Growth	Reading: ARM 2-4, IDM 6, R4, R7
2017-03-27	Neural Networks • MLP, RBF, ART	Reading: SO 18
2017-04-03	Deep Learning	Reading: DL II, III

	• Recurrent • Convolutional	HW:
2017-04-10	Stochastic Optimization	Reading: SO19, 20, 21 HW:
2017-04-10	Web Mining • Social Media • Twitter, Facebook, Linkedin, GitHub,	Reading: MSW 1-5 HW:
2017-04-17	Final Exam	

Reference Books

- [MW], Mining the Web, Discovering Knowledge from Hypertext Data, Morgan Kaufmann
- [MSW], Mining the Social Web, Matthew A. Russell, OR'ielly
- [ML] Introduction to Machine Learning, Ethem Alpyden, The MIT Press
- [DL] Deep Learning, An MIT Press book, Ian Goodfellow and Yoshua Bengio and Aaron Courville, http://www.deeplearningbook.org/
- [SO] Stochastic Optimization, Johannes Josef Schneider, Scott Kirkpatrick, Springer http://link.springer.com/book/10.1007%2F978-3-540-34560-2
- [VT] Visualize This : the FlowingData guide to design, visualization, and statistics, Yau, Nathan, John Wiley & Sons
- [ARM] Association Rule Mining, Models and Algorithms, Chenggi Zhang, Shichao Zhang, Springer, http://link.springer.com/book/10.1007%2F3-540-46027-6
- [IDM] Introduction to Data Mining, Pang-Ning Tan, Michael Steinbach, Vipin Kumar, Addison-Wesley, http://www-users.cs.umn.edu/~kumar/dmbook/index.php

Resources:

1. Interview with Michael Feindt on "Prescriptive Big Data Analytics" http://link.springer.com/article/10.1007%2Fs12599-014-0337-1
2. http://deeplearning.net/
3. Machine Learning - Dimensionality Reduction, BDU
4. Selecting the right objective measure for association analysis http://www.cse.msu.edu/~ptan/papers/IS.pdf
5. Reinforcement Learning Simulation, http://www.cs.cmu.edu/~awm/rlsim/
6. Open-Source Tools for Data Mining. http://eprints.fri.uni-lj.si/893/1/2008-OpenSourceDataMining.pdf
7. Association Rule Visualization, https://cran.csiro.au/web/packages/arulesViz/vignettes/arulesViz.pdf

Software Tools:

1. WEKA

2. KNIME
3. Gephi