* Introduction to Pattern Recognition, Feature Detection, Classification
* Review of Probability Theory, Conditional Probability and Bayes Rule
* Random Vectors, Expectation, Correlation, Covariance
* Review of Linear Algebra, Linear Transformations
* Decision Theory, ROC Curves, Likelihood Ratio Test
* Linear and Quadratic Discriminants, Fisher Discriminant
* Sufficient Statistics, Coping with Missing or Noisy Features
* Template-based Recognition, Feature Extraction
* Eigenvector and Multilinear Analysis
* Training Methods, Maximum Likelihood and Bayesian Parameter Estimation
* Linear Discriminant/Perceptron Learning, Optimization by Gradient Descent
* Support Vector Machines
* K-Nearest-Neighbor Classification
* Non-parametric Classification, Density Estimation, Parzen Estimation
* Unsupervised Learning, Clustering, Vector Quantization, K-means
* Mixture Modeling, Expectation-Maximization
* Hidden Markov Models, Viterbi Algorithm, Baum-Welch Algorithm
* Linear Dynamical Systems, Kalman Filtering
* Bayesian Networks
* Decision Trees, Multi-layer Perceptrons
* Reinforcement Learning with Human Interaction
* Genetic Algorithms
* Combination of Multiple Classifiers "Committee Machines"