**Linear Models**  
Understand linear approximation and modelling of problems and develop linear models  
  
**Dimensionality Reduction**  
Use ideas from linear algebra to transform dimensions and warp space providing additional flexibility and functionality to linear models.  
  
**SVM**  
Develop and implement kernel based methods to develop nonlinear models to solve few complex tasks.  
  
**Nearest Neighbours, K-means, and Gaussian Mixture Models**  
Review pattern recognition ideas with distance and cluster based models to understand similarity measures and grouping criteria.  
  
**Naive Bayes and Decision Trees**  
Dive into applications of bayes theorem and the use of decision criteria when learning from data.  
  
**Search**  
Look at search from the perspective of graphs, trees and heuristic based optimizations.  
  
**Logic and Planning**  
Discover ways to encode logic and develop agents that plan actions in an environment.  
  
**Reinforcement Learning and Hidden Markov Models**  
Engineering agents that learn from a sequence of actions using rewards and penalties.  
  
**Q-Learning and Policy gradient**  
Operate in a stateful world over value and policy approximations tasks