Semester Summary

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The University of Iowa
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Solving problems by search

- Search (Chap. 3&4)
  - How to formulate a search problem?
  - How to measure a search strategy?
  - What are popular strategies?
  - What are the best-first search and A*?
  - How to design and use a heuristic function?
  - What is local search? Hill-climbing? Simulated annealing?
  - What are Genetic Algorithms?
  - What's a population?
  - What are fitness criteria?
  - What are combination and mutation in GA?
Games

Game Playing (Chap 5)
- What’s the minimax algorithm?
- What’s Alpha-Beta pruning?
Constraint Satisfaction

- Constraint Satisfaction Problems (Chap 6)
  - What are constraint satisfaction problems?
  - Backtracking search
  - Propagation
  - Local search methods for CSP
Logics (Chap 7, 8, 9)

- What are syntax and semantics of Propositional Logic?
- What are syntax and semantics of First-order Logic?
- What are quantifiers and their meaning?
- What's a model?
- Validity vs. satisfiability?
- Entailment vs. Implication?
- How to obtain CNF?
- What's the truth-table inference system?
- What’s an inference rule system?
Logics (Chap 7, 8, 9)

- What are unification and most-general unifiers?
- What are resolution and its property?
- What kinds of Resolution Strategies?
- What’s the principle behind Prolog?
- Prolog Syntax and Data Structure
- How to program in Prolog? What’s a query?
- What’s the search strategy of Prolog?
- What’s the cut operator?
Uncertain Knowledge (Chap 13, 14)

- What is Bayes’ Rule?
- What is Bayesian Network?
- How to compute in a Bayesian Network?
Making Decisions (Chap 16)

- What is the MEU principle?
- How to use decision trees to make a decision?
Learning from Examples (Chap 18)

- Inductive Learning, Training set vs Test set
- Supervised vs Unsupervised
- Decision Tree Creation by entropy computation
- What is Nearest Neighbor Classification?
- Neural Networks: Definition, Computation, Perceptron and Backpropagation algorithm
- k-Means Clustering
- Support Vector Machines (SVM)
IRS vs Database Systems

What’s PageRank and how to compute it?