Conclusion

CS 486/686: Introduction to Artificial Intelligence
Fall 2013

Exam Information

- Tuesday, December 10
- 7:30pm-10:00 pm
- MC 2017/2054

Exam Information

- Closed Book

- Calculators can be used

- Format very similar to midterm

  - True/False

  - Short Answer

  - Longer Questions

Exam Information

- Focus of the exam is material since the midterm

    - Uncertainty

    - Bayes Nets

    - HMM

    - Decision Making/Decision Networks

    - MDPs and Reinforcement Learning

    - MAS

    - Machine Learning

        - Supervised, Statistical (Bayesian, MAP, ML), EM, Naive Bayes, Computational Learning Theory,...

Key Ideas

- Reasoning Under Uncertainty

  - Definitions and Semantics

  - Reasoning with Bayes Nets

  - Conditional Independence and Independence

Decision Making

- Expected Utility Theory

- Policies

- Decision Trees and Decision Diagrams (Influence Diagrams)

MDPs and RL

- Definition of an MDP

- Bellman equations

- Value Iteration and Policy Iteration

- Passive, Active, Model Based, Model Free Reinforcement Learning

- ADP, TD, Q-learning

- Exploration vs Exploitation

MAS

- Basic Game Theory

  - what is a game

  - what is a strategy

  - what is a Nash equilibrium and how to find it

- Basic Mechanism Design

Machine Learning

- Supervised learning

  - Decision trees

  - Overfitting

  - Training sets vs test sets

  - cross validation

  - ...

Statistical Learning

- Bayesian Learning

- MAP Learning

- ML Learning

- Using ML to find CPTs for Bayes Nets

- Naive Bayes models

EM

- EM algorithm
  - Use in Bayes Nets
  - Use in k-means clustering

Computational Learning Theory

- Theoretical guarantees for learning