CS 6958 - Robot Learning Course Overview

Syllabus

This course focuses on examining the question of how we can derive useful and robust behaviors for robots from data, when we lack explicit models of the robot and environment. Fundamental topics covered in the course include probabilistic model learning; reinforcement learning with continuous states and actions; online learning; imitation learning and learning from demonstration; inverse reinforcement learning; and learning from sensors for manipulation. Students should have a firm background in the basics of supervised learning and knowledge of basic planning or control algorithms. Students will be assessed on a combination of programming projects, in class student presentations, and several in class quizzes.

Modules

- Background
- Reinforcement Learning and Policy Search
- Model Learning
- Imitation Learning & Learning from Demonstration
- Inverse Reinforcement Learning
- Grasp Learning
- Other Learning Applications in Robotics

Projects

1. RL - Policy Search
2. Model Learning
3. Imitation Learning
4. Grasp Learning
5. Final Projects

Other Assignments

- Paper presentations
- Quizzes