CMPT 310 - D100 Artificial Intelligence Survey

Instructor(s): Oliver Schulte

Calendar Objective/Description:
Artificial Intelligence Survey

Instructor's Objectives:
Artificial Intelligence (AI) is the part of computer science concerned with systems that learn, reason and make/support decisions. The goal of this course is to provide students with a survey of different aspects of artificial intelligence. A variety of approaches with general applicability will be developed. We will start with the theory of optimal decision-making, both for single agents (expected utility) and multiple agents (game theory). The next topic is searching for solutions to complex decision and planning problems (search strategies and heuristics). We introduce basic concepts of machine learning, such as decision trees and neural nets. Probability as a mechanism for handling uncertainty in AI will be presented, with a focus on Bayesian networks.

Prerequisites:
see go.sfu.ca

Topics:
- Search
- Game theory and game playing: decision-making with other agents
- Planning
- Reasoning under uncertainty (probability)
- Bayesian networks
- Utility theory, Decision networks
- Learning: decision trees, neural networks
- Time permitting: reinforcement learning

Grading:
The grade is based on assignments 40%, exam 25%, quizzes 25%, participation 10%. Assignments are a mix of programming and conceptual exercises. The prerequisites are important for achieving a satisfactory grade in this course. Students must attain an overall passing grade on the weighted average of exams in the course in order to obtain a clear pass (C- or better).

Required Books:

Reference Books:
Academic Honesty Statement::

Academic honesty plays a key role in our efforts to maintain a high standard of academic excellence and integrity. Students are advised that ALL acts of intellectual dishonesty will be handled in accordance with the SFU Academic Honesty and Student Conduct Policies (http://www.sfu.ca/policies/gazette/student.html).