Study Guide (Mid-term CISC440)

Topics included:

Chapter 1: Introduction

- What is Artificial Intelligence (AI)?
- The foundation of AI
- The history of AI
- The state of Art
- Risks and Benefits

Chapter 2: Intelligent Agents

- Agents and environments
- Rationality
- Nature of Environments
- The Structure of Agents

Chapter 3: Solving problems by Search.

- Solving Problems by Searching
- Problem Solving Agents
- Example Problems
- Search Algorithms
- Uninformed Search Strategies
- Informed (Heuristic) Search Strategies
- Heuristic Functions

Chapter 4: Search in Complex Environments (Focus on Local Search)

- Local Search and Optimization Problems
- Local search in Continuous spaces
- Hill Climbing
- Simulated Annealing
- Local Beam Search
- Genetic Algorithm

Chapter 5: Adversarial Search and Games

- Game Theory
- Optimal Decisions in Games
- Minmax Algorithm
- Alpha-Beta Tree Search (evaluation function and expectimax are not included)

Chapter 6: Constraint Satisfaction Problems

- Defining constraints satisfaction problem
- Constraints Propagation
- Backtracking Search for CSP
- Local Search for CSP
- The Structure of Problems

Reference Material:

You will find following items useful

- Lecture slides (on Canvas)
- Programming and written homework (completed by you)
- Quizzes
- Course textbook
- Chapter Notes (Provided via canvas)
- Lecture notes (if taken any by you)

Exam:

- Students using DSO center should register for the same day exam.
- Exam will be closed book closed notes.
- Exam will be one hour.
- Exam will have 4 set of questions.
  - 10 points Search Formulation
  - 10 Points CSP
  - 10 Points Adversarial Search
  - 15 points short questions (chapter 1 -6).