



CSIS4463: Artificial Intelligence



The Instructor

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- Research Interests:

- Applications of AI
 - E.g., Industrial, Transportation, Homeland Security
- Heuristic Search
- Evolutionary Computation
- Machine Learning
- Multi-Agent Systems



Course Time, Location, etc

- Tuesday & Thursday, 12:30-2:20
 - Meets in F206
- Some Lab Days (Lab TBD)
 - We will meet in a lab for some class sessions
 - Will introduce you to various AI-related tools
 - E.g., you will be introduced to at least one “AI” language (either Prolog or Lisp)
- My Office Hours:
 - Tuesday/Thursday 11am-12noon
 - Additional days/times by appointment
 - Or drop by any time I’m there



Pre-requisites

- **CSIS2102: Programming and Problem Solving II**
 - Need programming skills at the level of CSIS2102, though not necessarily in Java
- **MATH2225: Discrete Mathematics (C or better)**
 - Some of the Math background needed includes: boolean algebra, logic, sets, analysis of algorithms
 - Alternate pre-req: MATH3325
- **Recommended: CSIS3103 Data Structures**
 - I will overview/review Data Structures material as needed



Textbook

- **Artificial Intelligence: A Modern Approach, Third Edition (Russell & Norvig)**



Grading

- 10% Participation
 - 50% Homework/Problem Sets
 - 20% Exam 1
 - 20% Exam 2
- Scale:
 - 90+ is an A
 - 80+ is at least a B
 - 70+ is at least a C
 - 60+ is at least a D
 - < 60 is an F



Participation:

- Worth 10% of your grade
- Things that will be considered:
 - Taking part in lab-related activities
 - Taking part in classroom activities
 - Generally participating (e.g., asking/answering questions, etc)



Homework / Problem Sets

- Worth 50%
- Examples of what Homework can include:
 - Sets of problems related to algorithms discussed in class
 - Some programming exercises
- Lateness Policy:
 - 50% off late assignment grade
 - Not accepted more than one week late
 - First time late, penalty waived if less than 1 week late



Exams

- Two exams worth 20% each
- Not cumulative
- Closed book
- Allowed 2 sheets (8.5" by 11") of notes



Topics to be Covered

- Chapter 1: Overview of AI
 - What is AI? History of AI. AI's foundations
- Chapter 2: Intelligent Agents
 - What is an agent; Rational behavior; an agent's environment; agent structure
- Chapter 3: Solving problems by searching
 - Uninformed search
 - Informed (heuristic) search
 - Heuristic functions



Topics to be Covered

- Section 4.1: Local search
 - Hill climbing
 - Simulated annealing
 - Tabu search
 - Local Beam Search
 - Genetic Algorithms



Topics to be Covered

- Chapter 5: Adversarial Search
 - Also known as game search
- Chapter 6: Constraint Satisfaction
- Chapter 13: Uncertainty in AI
- Chapter 14: Probabilistic Reasoning
 - Bayesian Networks



Topics to be Covered

- Section 20.3.1: Learning Probabilistic Models
 - The EM Algorithm
- Sections 17.1-17.3: Sequential Decision Problems
- Chapter 21: Reinforcement Learning