Artificial Intelligence - CS-6601-O01

Edit

SPRING 2024

CLASS SCHEDULE (https://gatech.instructure.com/courses/371008/pages/class-schedule)

Please email the Head TAs pdavis61@gatech.edu (mailto:pdavis61@gatech.edu) and ccui46@gatech.edu (mailto:ccui46@gatech.edu) for any emergency extension requests along with Prof. Starner.

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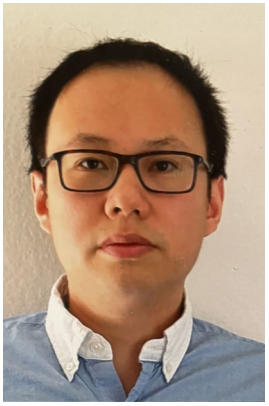

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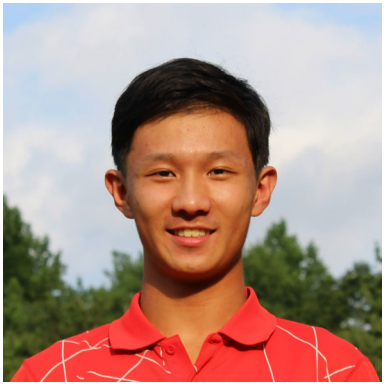

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** Any missing TA information will be added soon*

Course Description

CS6601 is a survey of the field of Artificial Intelligence and will often be taken as the first graduate course in the area. It is designed to be challenging and involves significant independent work, readings, and assignments. The course covers most of the required textbook **Artificial Intelligence A Modern Approach 4th edition (https://www.pearson.com/us/higher-education/program/Russell-Artificial-Intelligence-A-Modern-Approach-4th-Edition/PGM1263338.html)** , which is a keystone of Georgia Tech's Intelligent Systems PhD qualifier exam.

Required Course Readings

The course textbook is available as a hardcover and rental **Artificial Intelligence: A Modern Approach (AIMA, Fourth edition) (https://www.pearson.com/us/higher-education/program/Russell-Artificial-Intelligence-A-Modern-Approach-4th-Edition/PGM1263338.html)** by Stuart Russell and Peter Norvig. Note there is a cheaper ebook available **CourseSmart edition (https://www.vitalsource.com/products/artificial-intelligence-stuart-russell-peter-norvig-v9780134671932)** . The textbook will be supplemented by video lectures and peer-reviewed papers whose links will be provided with the course material.

Course Videos

You will find video lectures located on the course navigation menu in either in Modules or in Ed Lessons. We strongly recommend staying on pace with the schedule and that you choose your preferred viewing platform.

Competency

To succeed in this course, you should be able to answer 'Yes' to the following questions:

- Are you confident with computer programming in Python?
- Have you taken several classes that required intensive programming?
- Are you familiar with basic concepts of data structures and programming, such as inheritance and O notation?
- Are you familiar with basic concepts of algorithm design, such as algorithms for sorting, searching, and matching?
- Are you familiar with the basic concepts of linear algebra, probability, and single/multi-variable calculus?

If your answer is “No” to any of these questions, this course may not be appropriate for you.

Class Goals

By the end of this course, we hope you achieve the following goals:

- **Foundation:** You should build a strong foundation in classic AI techniques like game playing, search, constraint satisfaction, logic and planning, machine learning, graphical models, etc.
- **Skills:** You should be able to propose, evaluate, and implement solutions to problems requiring AI techniques.
- **Integration**: You should be aware of where AI intersects with other disciplines, primarily machine learning and perception.
- **Assessment:** You should have experienced different flavors of problems and solutions, and have developed a taste for some; you should also have confidence in how and where AI can be applied in problems relevant to society.

Note that the instructors are using artificial intelligence-based tools to help teach this course. Examples include tools to help detect cheating, improve grading fairness, suggest urgent posts to TAs for responding, and several other tasks.

More information here:

Class Materials (https://gatech.instructure.com/courses/371008/pages/class-materials)
Course Schedule (https://gatech.instructure.com/courses/371008/pages/class-schedule)
Reading List

Class Assessments (https://gatech.instructure.com/courses/371008/pages/class-assessments)
Grade Categories
Grading Policies
Assignments

Midterm and Final

Class Policies (https://gatech.instructure.com/courses/371008/pages/class-policies)
Course Communication
Office Hours
Late Work
Collaboration & Academic Honesty
Feedback
Diversity and Inclusion

Course Summary:

Date	Details	Due
Mon Jan 15, 2024	**Assignment 0: Hello AI World!** (https://gatech.instructure.com/courses/371008/assignments/1588764)	due by 7:59am
Mon Jan 22, 2024	**Exercise 1. Word Morphing** (https://gatech.instructure.com/courses/371008/assignments/1588758)	due by 7:59am
	Exercise 2: A* (https://gatech.instructure.com/courses/371008/assignments/1588794)	due by 7:59am
	Plagiarism Quiz (https://gatech.instructure.com/courses/371008/assignments/1588760)	due by 7:59am
Mon Jan 29, 2024	**Assignment 1: Search** (https://gatech.instructure.com/courses/371008/assignments/1588768)	due by 7:59am
Wed Jan 31, 2024	**Exercise 3: Hill climbing** (https://gatech.instructure.com/courses/371008/assignments/1588748)	due by 8am
Mon Feb 5, 2024	**Assignment 1 [BONUS]: The Race!** (https://gatech.instructure.com/courses/371008/assignments/1588766)	due by 7:59am
Wed Feb 7, 2024	**Exercise 4: MiniMax** (https://gatech.instructure.com/courses/371008/assignments/1588756)	due by 8am
Mon Feb 12, 2024	**Assignment 2: Isolation Player** (https://gatech.instructure.com/courses/371008/assignments/1588772)	due by 7:59am
Wed Feb 14, 2024	**Exercise 5: Menu CSP**	due by 8am

Date	Details	Due
	(https://gatech.instructure.com/courses/371008/assignments/1588752)	
Mon Feb 19, 2024	Assignment 2 [BONUS]: BotFight (https://gatech.instructure.com/courses/371008/assignments/1588770)	due by 7:59am
Wed Feb 21, 2024	Exercise 6: Monty Hall (https://gatech.instructure.com/courses/371008/assignments/1588754)	due by 8am
Mon Feb 26, 2024	Assignment 3: Bayes Nets (https://gatech.instructure.com/courses/371008/assignments/1588774)	due by 7:59am
Wed Feb 28, 2024	Exercise 7: D-Separation (https://gatech.instructure.com/courses/371008/assignments/1588750)	due by 8am
Fri Mar 1, 2024	Practice for Exam question types (https://gatech.instructure.com/courses/371008/assignments/1588798)	due by 11:59pm
Mon Mar 4, 2024	Midterm Exam (https://gatech.instructure.com/courses/371008/assignments/1588784)	due by 7:59am
	Midterm Exam Calculations (https://gatech.instructure.com/courses/371008/assignments/1588796)	due by 7:59am
Mon Mar 18, 2024	Assignment 4: Decision Trees (https://gatech.instructure.com/courses/371008/assignments/1588778)	due by 7:59am
	Exercise 8: Neural Nets (https://gatech.instructure.com/courses/371008/assignments/1588744)	due by 11:59pm
Mon Mar 25, 2024	Assignment 4 Challenge! (https://gatech.instructure.com/courses/371008/assignments/1588776)	due by 7:59am
Wed Apr 3, 2024	Exercise 9: DTW (https://gatech.instructure.com/courses/371008/assignments/1588762)	due by 8am
Mon Apr 8, 2024	Assignment 5: Gaussian Mixture Models (https://gatech.instructure.com/courses/371008/assignments/1588780)	due by 7:59am
Wed Apr 10, 2024	Exercise 10: Some More Logic	due by 8am

Date	Details	Due
	(https://gatech.instructure.com/courses/371008/assignments/1588746)	
Mon Apr 22, 2024	Assignment 6: HMMs (https://gatech.instructure.com/courses/371008/assignments/1588782)	due by 7:59am
Thu May 2, 2024	Final Exam (https://gatech.instructure.com/courses/371008/assignments/1588788)	due by 7:59am
	Final Exam Calculations (https://gatech.instructure.com/courses/371008/assignments/1588790)	due by 7:59am
	Roll Call Attendance (https://gatech.instructure.com/courses/371008/assignments/1588800)	