Course Syllabus

Fall 2024

[Class Schedule (https://gatech.instructure.com/courses/403570/pages/class-schedule-2)](https://gatech.instructure.com/courses/403570/pages/class-schedule-2)

[Office Hours Calendar (https://gatech.instructure.com/courses/403570/pages/office-hours-calendar)](https://gatech.instructure.com/courses/403570/pages/office-hours-calendar)

Please follow the [Class Policies "Late Work" instructions (https://gatech.instructure.com/courses/403570/pages/class-policies-2#Late)](https://gatech.instructure.com/courses/403570/pages/class-policies-2#Late) and email the [Head TAs (mailto:pdavis61@gatech.edu;hrajasekhar3@gatech.edu;thomas.ploetz@gatech.edu)](mailto:pdavis61@gatech.edu;hrajasekhar3@gatech.edu;thomas.ploetz@gatech.edu) and Professor Ploetz for emergency extension requests.

Teaching Team

[Thomas Ploetz ⤷ (https://www.cc.gatech.edu/people/thomas-ploetz)](https://www.cc.gatech.edu/people/thomas-ploetz)
Instructor
thomas.ploetz@gatech.edu

Hrudhai Rajasekhar
Head TA
hrajasekhar3@gatech.edu

Paul Davis
Head TA
pdavis61@gatech.edu

Vriksha Srihari
vsrihari3@gatech.edu

Snigdha Verma
sverma334@gatech.edu

Muskan Bawa
mbawa6@gatech.edu

Abirath Raju
araju60@gatech.edu

Adam Mazlout
adam.mazlout@gatech.edu

Yunnuo Zhang
yzhang3563@gatech.edu

Priyadarshini Tamilselvan
ptamilselvan3@gatech.edu

Quipu Shen
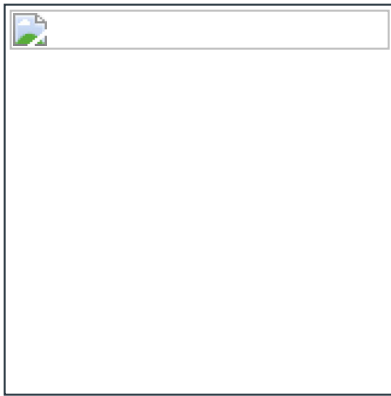qshen45@gatech.edu

Sneh Gupta
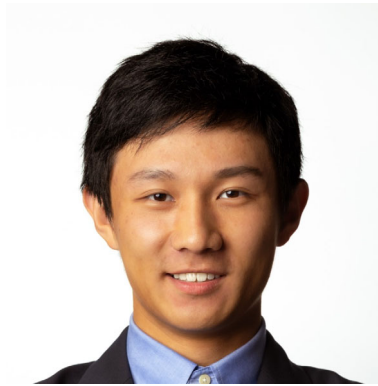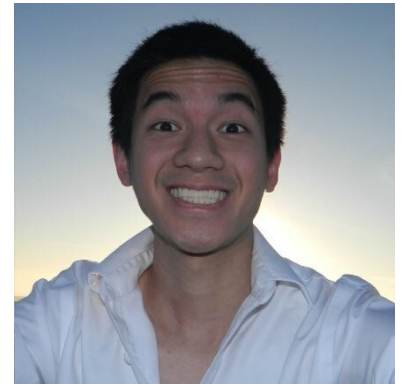sgupta852@gatech.edu

Rory McGurty
rmcgurty3@gatech.edu

Kai Chen
kchen311@gatech.edu

Milap Naik
mnaik38@gatech.edu

Hazel John
hjohn8@gatech.edu

Raymond Jia
jia.raymond@gatech.edu

Nicholas Shu
nshu3@gatech.edu

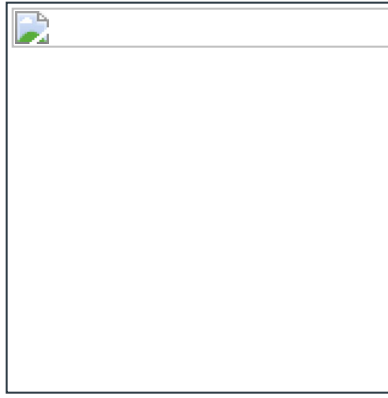Kritika Venkatachalam
kvenkata8@gatech.edu
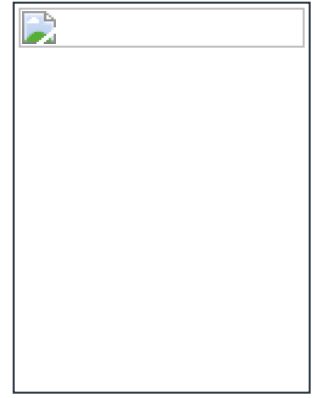

Qingyu Xiao
qxiao33@gatech.edu
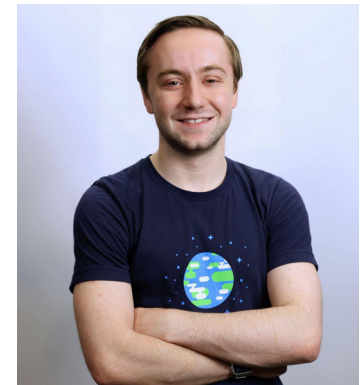
Jeremy Collins
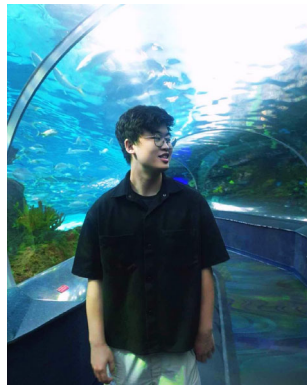jcollins90@gatech.edu

Liquan Wang

lwang831@gatech.edu

Koushik Nagaraj

knagaraj31@gatech.edu

Pranav Sharma

psharma373@gatech.edu
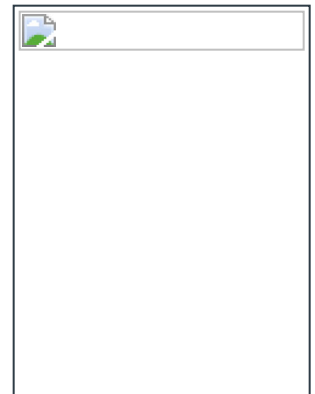

Zeyu Chang

zchang36@gatech.edu

Zhengyu Li

zli3081@gatech.edu

Vidhya Kewale

vkewale3@gatech.edu

Hakesh Darapaneni

hdarapaneni3@gatech.edu

Prajwal Mohan Kumar

pkumar352@gatech.edu
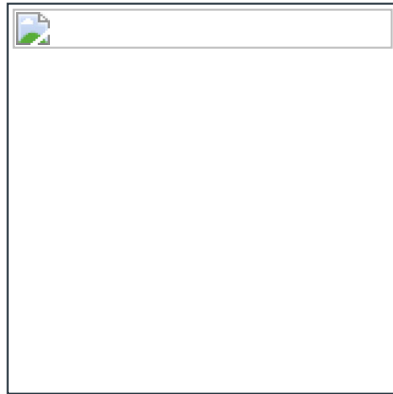
Stanley Wong

swong97@gatech.edu

Tanmay Vivek Chavan

tchavan3@gatech.edu

Aditya Shukla

ashukla301@gatech.edu

Dhanush Babu Ramesh Babu

rdhanush22@gatech.edu

Sheraz Hassan

shassan74@gatech.edu

Sixuan Wu

swu469@gatech.edu

* 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-**

. 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/403570/pages/class-materials-2)

(https://gatech.instructure.com/courses/403568/pages/campus-resources-for-students)

(https://gatech.instructure.com/courses/403568/pages/class-policies)

(https://gatech.instructure.com/courses/403570/pages/class-materials-2) **Course Schedule**

(https://gatech.instructure.com/courses/403570/pages/class-schedule-2)

(https://gatech.instructure.com/courses/403570/pages/class-schedule-2) Reading List

Class Assessments (https://gatech.instructure.com/courses/403570/pages/class-assessments-2)

(https://gatech.instructure.com/courses/403568/pages/campus-resources-for-students)

(https://gatech.instructure.com/courses/403568/pages/class-policies)

(https://gatech.instructure.com/courses/403570/pages/class-assessments-2) Grade Categories

Grading Policies

Assignments

Midterm and Final

Class Policies (https://gatech.instructure.com/courses/403570/pages/class-policies-2)

(https://gatech.instructure.com/courses/403568/pages/campus-resources-for-students)

(https://gatech.instructure.com/courses/403568/pages/class-policies)

Course Communication

Office Hours

Late Work

Collaboration & Academic Honesty

Feedback

Diversity and Inclusion

Campus Resources for Students (https://gatech.instructure.com/courses/403570/pages/campus-resources-for-students)

(https://gatech.instructure.com/courses/403568/pages/class-policies)

Academic Support

Personal Support

GeorgiaTech Resources

National Resources

Course Summary:

Date	Details	Due
Sun Aug 25, 2024	📝 **Assignment 0** (https://gatech.instructure.com/courses/403570/assignments/1790468)	due by 3:59pm
Mon Aug 26, 2024	📝 **Plagiarism Quiz** (https://gatech.instructure.com/courses/403570/assignments/1790462)	due by 7:59am
Thu Sep 5, 2024	📝 **Challenge Question 1 - Search**	due by 7:59am

Date	Details	Due
	(https://gatech.instructure.com/courses/403570/assignments/1854404)	
Fri Sep 6, 2024	📝 **Plagiarism Quiz** (https://gatech.instructure.com/courses/403570/assignments/1790462) (1 student)	due by 11:59pm
Mon Sep 9, 2024	📝 **Plagiarism Quiz** (https://gatech.instructure.com/courses/403570/assignments/1790462) (1 student)	due by 7:59am
	📝 **Assignment 1** (https://gatech.instructure.com/courses/403570/assignments/1790472)	due by 7:59am
Wed Sep 11, 2024	📝 **Assignment 1** (https://gatech.instructure.com/courses/403570/assignments/1790472) (2 students)	due by 8am
Thu Sep 12, 2024	📝 **Assignment 1** (https://gatech.instructure.com/courses/403570/assignments/1790472) (2 students)	due by 7:59am
	📝 **Plagiarism Quiz** (https://gatech.instructure.com/courses/403570/assignments/1790462) (5 students)	due by 7:59am
	📝 **Challenge Question 2 - Optimization** (https://gatech.instructure.com/courses/403570/assignments/1855730)	due by 7:59am
Sat Sep 14, 2024	📝 **Assignment 1** (https://gatech.instructure.com/courses/403570/assignments/1790472) (2 students)	due by 7:59am
Thu Sep 19, 2024	📝 **Challenge Question 3 - Game Playing** (https://gatech.instructure.com/courses/403570/assignments/1855734)	due by 7:59am
Mon Sep 23, 2024	📝 **Assignment 2a** (https://gatech.instructure.com/courses/403570/assignments/1790478)	due by 7:59am
	📝 **Assignment 2b** (https://gatech.instructure.com/courses/403570/assignments/1790480)	due by 7:59am

Date	Details	Due
	📝 **Assignment 2c** (https://gatech.instructure.com/courses/403570/assignments/1790482)	due by 7:59am
Thu Sep 26, 2024	📝 **Assignment 2a** (https://gatech.instructure.com/courses/403570/assignments/1790478) (1 student)	due by 7:59am
	📝 **Assignment 2b** (https://gatech.instructure.com/courses/403570/assignments/1790480) (1 student)	due by 7:59am
	📝 **Assignment 2c** (https://gatech.instructure.com/courses/403570/assignments/1790482) (1 student)	due by 7:59am
	📝 **Challenge Question 4 - CSPs** (https://gatech.instructure.com/courses/403570/assignments/1855738)	due by 7:59am
	📝 **Challenge Question 5 - Probability** (https://gatech.instructure.com/courses/403570/assignments/1855740)	due by 7:59am
Fri Sep 27, 2024	📝 **Assignment 2a** (https://gatech.instructure.com/courses/403570/assignments/1790478) (2 students)	due by 7:59am
	📝 **Assignment 2b** (https://gatech.instructure.com/courses/403570/assignments/1790480) (2 students)	due by 7:59am
	📝 **Assignment 2c** (https://gatech.instructure.com/courses/403570/assignments/1790482) (2 students)	due by 7:59am
Mon Sep 30, 2024	📝 **Assignment 2 [BONUS]: BotFight 🤖** (https://gatech.instructure.com/courses/403570/assignments/1790474)	due by 7:59am
Thu Oct 3, 2024	📝 **Challenge Question 6 - Bayes Nets** (https://gatech.instructure.com/courses/403570/assignments/1855742)	due by 7:59am
Mon Oct 7, 2024	📝 **Assignment 3**	due by 7:59am

Date	Details	Due
	(https://gatech.instructure.com/courses/403570/assignments/1790486)	
Mon Oct 14, 2024	📝 **Midterm Exam Copy** (https://gatech.instructure.com/courses/403570/assignments/1882116)	due by 7:59am
	📝 **Midterm Exam** (https://gatech.instructure.com/courses/403570/assignments/1881962)	due by 7:59am
	📝 **Midterm Exam Calculations** (https://gatech.instructure.com/courses/403570/assignments/1807958)	due by 7:59am
Wed Oct 16, 2024	📝 **Midterm Exam Calculations** (https://gatech.instructure.com/courses/403570/assignments/1807958) (1 student)	due by 7:59am
Fri Oct 18, 2024	📝 **Midterm Exam** (https://gatech.instructure.com/courses/403570/assignments/1881962) (9 students)	due by 7:59am
	📝 **Midterm Exam Calculations** (https://gatech.instructure.com/courses/403570/assignments/1807958) (11 students)	due by 7:59am
Mon Oct 21, 2024	📝 **Midterm Exam** (https://gatech.instructure.com/courses/403570/assignments/1881962) (1 student)	due by 7:59am
Mon Oct 28, 2024	📝 **Assignment 4** (https://gatech.instructure.com/courses/403570/assignments/1790492)	due by 7:59am
Thu Oct 31, 2024	📝 **Challenge Question 7 - Machine Learning** (https://gatech.instructure.com/courses/403570/assignments/1884062)	due by 7:59am
	📝 **Assignment 4** (https://gatech.instructure.com/courses/403570/assignments/1790492) (1 student)	due by 8am
Mon Nov 4, 2024	📝 **Assignment 4** (https://gatech.instructure.com/courses/403570/assignments/1790492) (2 students)	due by 7:59am
Mon Nov 11, 2024	📝 **Assignment 4** (https://gatech.instructure.com/courses/403570/assignments/1790492)	due by 7:59am

Date	Details	Due
	(1 student)	
	📝 **Assignment 4 Challenge!** (https://gatech.instructure.com/courses/403570/assignments/1790490)	due by 7:59am
	📝 **Assignment 5** (https://gatech.instructure.com/courses/403570/assignments/1790496)	due by 7:59am
	📝 **Assignment 3** (https://gatech.instructure.com/courses/403570/assignments/1790488) (1 student)	due by 8am
Thu Nov 14, 2024	📝 **Challenge Question 8 - Pattern Recognition Through Time** (https://gatech.instructure.com/courses/403570/assignments/1884074)	due by 7:59am
Mon Nov 18, 2024	📝 **Assignment 5** (https://gatech.instructure.com/courses/403570/assignments/1790496) (2 students)	due by 7:59am
Thu Nov 21, 2024	📝 **Challenge Question 9 - Logic and Planning** (https://gatech.instructure.com/courses/403570/assignments/1884072)	due by 7:59am
Mon Nov 25, 2024	📝 **Assignment 5** (https://gatech.instructure.com/courses/403570/assignments/1790496) (1 student)	due by 7:59am
	📝 **Assignment 6** (https://gatech.instructure.com/courses/403570/assignments/1790500)	due by 7:59am
Tue Nov 26, 2024	📝 **Challenge Question 10 - Planning Under Uncertainty** (https://gatech.instructure.com/courses/403570/assignments/1884070)	due by 7:59am
Mon Dec 2, 2024	📝 **Assignment 6** (https://gatech.instructure.com/courses/403570/assignments/1790500) (1 student)	due by 7:59am
Mon Dec 9, 2024	📝 **Final Exam** (https://gatech.instructure.com/courses/403570/assignments/1807952)	due by 7:59am
	📝 **Final Exam Calculations**	due by 7:59am

Date	Details	Due
	(https://gatech.instructure.com/courses/403570/assignments/1807954)	
	📝 **Challenge Question 2: Evolutionary Algorithms** (https://gatech.instructure.com/courses/403570/assignments/1807942)	
	📝 **Challenge Questions 3: Game Playing** (https://gatech.instructure.com/courses/403570/assignments/1807944)	
	📝 **Challenge Questions 4: Constraint Satisfaction Problems** (https://gatech.instructure.com/courses/403570/assignments/1807946)	
	📝 **Challenge Questions 5 Probability/Bayes Nets** (https://gatech.instructure.com/courses/403570/assignments/1807948)	
	📝 **Roll Call Attendance** (https://gatech.instructure.com/courses/403570/assignments/1790508)	