CSCE 5210 - 003

I. Course Information:

Instructor: Weishi Shi (Weishi.Shi@unt.edu)

Office: Discovery Park F227

Office Hours: 4:00 pm - 5:30 pm Thu, Fri.

Office Hours (IAs): Tue 4:00pm - 5:00pm / Madireddy, Radheswar Reddy

Thu 1:00pm - 3:30pm/Memon, Mustafa

Lecture Time: 5:30pm-8:20pm Fri.

Lecture Location: K-120.

II. Course Description:

This course reveals the classical innovations, ideas, methodologies, and implementations behind the huge success of artificial intelligence from the last century until the present. We will train you to learn to appreciate the design concepts behind some famous AI algorithms, as well as to have a deep understanding of the decisive role of modern applied mathematics and its branches in these AI algorithms.
The covered topics include typical searching algorithms, game play theory, knowledge representation, statistical learning, reinforcement learning, and deep learning.

III. Course Requirements:

- Comfortable with python programming.
- Undergraduate level calculus, linear algebra, and statistics.
- Attendance: Attendance is mandatory.

IV. Course Outcomes:

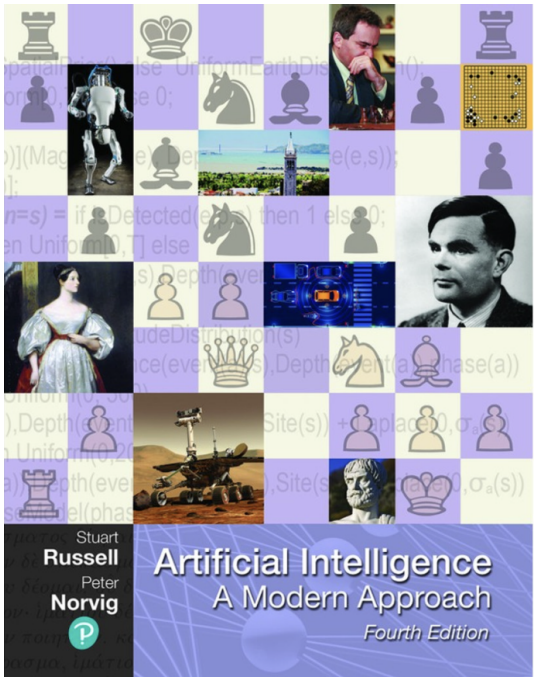
After taking this course, the student will:

- Be familiar with types of agents and operating environments.

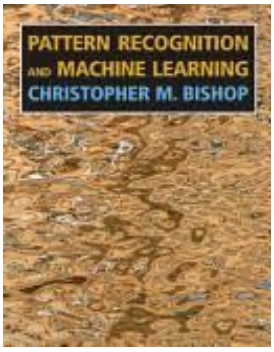
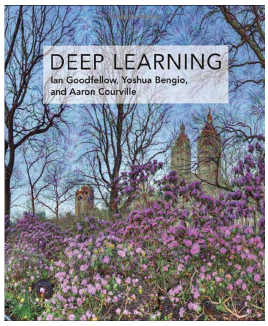
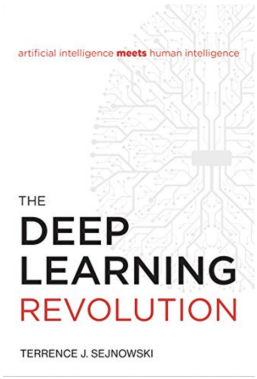
- Be familiar with search algorithms.
- Be familiar with the game strategies.
- Be able to propose, design, and formalize a machine learning task.
- Have a fundamental understanding of learning methods, including neural networks, Bayesian networks and reinforcement learning
- Be able to implement classical machine learning models and deep neural networks with open source libraries.

V. Course Textbooks:

Main textbook:

	**NAME:** Artificial Intelligence: A Modern Approach (4th Edition) **Author:** Stuart Russell and Peter Norvig **Availability:** Full PDF online

Recommended textbook:

	**NAME:** Pattern Recognition and Machine Learning **Author:** C. Bishop **Availability:** Full PDF online
	**NAME:** Deep Learning **Author:** Ian Goodfellow et al. **Availability:** Full PDF online
	**NAME:** The Deep Learning Revolution **Author:** Terrence J. SENJNOWSKI **Availability:** No free edition on-line

VI. Course Schedule:

Calendar	Major Topic(s)	Content Covered in TextBook	Activities
Week1 (9.2)	Introduction to AI Agents in AI	Ch1,Ch2	Team-Up start
Week2 (9.9)	Searching Methods	Ch3,Ch4	Team-Up due. Project1 publish
Week3 (9.16)	Game Theory	Ch5	
Week4 (9.23)	Uncertainty & Reasoning	Ch12,Ch13	Assignment 1 publish
Week5 (9.30)	Decision Making	Ch16,Ch17	Project 1 due. Project 2 publish
Week6 (10.7)	Machine Learning Basics	Ch19	Assignment 1 due, Assignment 2 publish
Week7 (10.14)	Probabilistic Models /Review for Mid-term	Ch20	
Week8 (10.21)	**Mid-Term Exam**		**Mid-Term Exam**
Week9 (10.28)	Deep Learning	Ch21	Assignment 2 due. Assignment 3 publish
Week10 (11.4)	Computer Vision	Ch24	
Week11 (11.11)	Natural Language Processing	Ch23	Assignment 3 due. Assignment 4 publish
Week12 (11.18)	Reinforcement Learning	Ch22	Project 2 due. Project 3 publish
~~Week13 (11.25)~~			**Thanks Giving, No Class**
Week14 (12.2)	Class Summary & Review		Project 3 due. Assignment 4 due.
(12.16)	**Final Exam**		**Final Exam**

Grade & Evaluation:

Component	Weight
Assignments	4 * 5 = 20%
Team Project	1.Proposal 6% 2.Implementation 7% 3.Report 7% Total: 20%
Mid Term	30%
Final	30%
Extra Credits for Participating in the Class Discussion	(0% ~ 5%)*1% = 0% ~ 5%

Percentage	Grade
A	[90%,100%]
B	[80%,90%)
C	[70%,80%)
D	[60%,70)
F	[0%,60)

VII. Course Rules:

- Emails will be answered as promptly as possible. Emails outside normal working hours (8 am to 5 pm) will be answered on the next working day.
- Work handed in for grade (homework, project report, etc.) MUST BE YOUR OWN effort only. Students are NOT allowed to use online solutions from previous course offerings, websites, etc. This will be strictly checked and enforced. The students should adhere to the UNT policies and procedures on the Code of Academic Integrity. 06.003 Student Academic Integrity

https://policy.unt.edu/policy/06-003. Plagiarism WILL result in a score of 0 for the assessment in which it occurs.

- Any appeals on assessment grading must be made online in Canvas (not by email) **no later** than **two days** after the grading is complete. This applies to examinations as well. Appeals should be as specific as possible and must contain a valid reason. Appeal such as "I think I deserve more for this assessment, or my overall grade has reduced as a result of this assessment" are NOT valid reasons and such appeals will not be processed. Grading is done carefully, and, in most cases, appeals will not result in a change of mark.
- Student behavior that interferes with an instructor's ability to conduct a class or other students' opportunity to learn is unacceptable and disruptive and will not be tolerated in any instructional forum at UNT. Students engaging in unacceptable behavior will be directed to leave the classroom and the instructor may refer the student to the Center for Student Rights and Responsibilities to consider whether the student's conduct violated the Code of Student Conduct. The university's expectations for student conduct apply to all instructional forums, including university and electronic classrooms, labs, discussion groups, field trips, etc. The Code of Student Conduct can be found at https://policy.unt.edu/policy/07-012
- Usage of cell phones, earphones, and other electronic devices, or recording of lectures is strictly prohibited. Usage of laptops and tablets is permitted for class purposes, only after obtaining permission from the instructor. Usage of classrooms computers, if any, are not allowed, while the class is in session. Any student who uses an unauthorized device will lose 1 point (out of 100) and may be asked to leave the classroom.