CSCE 3214 / 5214 – Software Development for A.I.

Instructor Information

Dr. Ryan Garlick, garlick@unt.edu
Office Hours: via Zoom link (times listed in Canvas). Please email at least 24 hours prior and I will send a Zoom meet link.

Teaching Assistants:

Shaira Abu-Shaira shairaabu-shaira@my.unt.edu
Aniv Chakravarty AnivChakravarty@my.unt.edu

TA Office Hours: via Zoom link (times listed in Canvas). Please email at least 24 hours prior to request a meeting.

Course Description, Structure, and Objectives

New paradigms for developing software are needed to create and manage systems with AI capabilities, particularly for practitioners without extensive programming experience. Students in this course will be taught how to leverage available artificial intelligence APIs flexibly and reliably through a series of demo-driven tasks. Additionally, as data management is integral to AI system development, an emphasis will be made to collect and process data for AI system training and testing. Traditional programming concepts and software design principles will be covered in a task-oriented manner to interface with advanced AI libraries and frameworks in order to build and maintain AI infrastructure.

Prerequisite(s): MATH 1650 or instructor consent.

This (undergraduate) course is for non-computer science and engineering majors.

Experience with Python is helpful as it is used extensively in the course, but significant prior programming experience with any language will be sufficient.

This course is online and will follow a weekly module format.

Course Outcomes:

1. Use a high-level programming language to build and evaluate different machine learning models.
2. Manage data collection, visualizing, preprocessing, and partitioning for machine learning applications.
3. Analyze problems and craft appropriate solutions using existing products, API's and other tools in combination with custom development as required.
4. Create graphical user interface (GUI) and web applications for AI.
5. Store code's history and collaborate with others using code repositories and other collaboration tools.
6. Properly document, share and explain problem solutions to collaborators and potential clients.

Required/Recommended Materials

All materials for the course are online and presented through Canvas. There is no textbook for the course.

ADA Notice

The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking reasonable accommodation must first register with the Office of Disability Access (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with a reasonable accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request reasonable accommodations at any time; however, ODA notices of reasonable accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of reasonable accommodation for every semester and must meet with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of reasonable accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the privacy of the student. For additional information, refer to the Office of Disability Access website (http://www.unt.edu/oda). You may also contact ODA by phone at (940) 565-4323.

Assessing Your Work

Homework	35%
Quizzes	35%
Midterm	15%
Final Exam	15%

A = 90-100%
B = 80-89%
C = 70-79%
D = 60-69%
F = 59% or below

Late work is not accepted and there is no extra credit or dropped assignments or quizzes.

Course Schedule (subject to change)

Week 1: Introduction and Tools
Week 2: Python Part 1
Week 3: Python Part 2
Week 4: Python Part 3
Week 5: Topics
Week 6: Machine Learning
Week 7: Learning Types
Week 8: Midterm
Week 9: Spring Break
Week 10: Reinforcement Learning
Week 11: Intro to DeepRacer 1
Week 12: Intro to DeepRacer 2
Week 13: DeepRacer Development 1
Week 14: DeepRacer Development 2
Week 15: DeepRacer Tournament
Week 16: Final Exam

Graduate students will have additional requirements related to the DeepRacer project.

Attendance and Participation

You are expected to keep pace with the class and turn assignments in when due (typically weekly). Materials will be posted well before the due date and you are encouraged to work ahead in case unforeseen circumstances arise.