Machine Learning/ CSCE 5215/004 and CSCE 4205/ 400

Instructor Information
- **Instructor:** Dr. Ajita Rattani
- **Highest Education:** Ph.D. in Computer Science and Engineering
- **Teaching Interest:** Machine Learning, Computer Vision, Image Recognition
- **Research Interest:** DeepFakes, Fairness of AI, On-device AI, Biometrics
- **Department:** Computer Science and Engineering
- **Office Location:** Discovery Park F297A
- **Email:** ajita.rattani@unt.edu
- **Preferred Method of Contact:** Email
- **Office Hours:** Friday, 11:00 am - 1:00 pm
- **Classroom Day/Time:** Asynchronous Online

Course Description, Structure, and Objectives

The theory and process to create systems that learn directly from data to make predictions and decisions. Topics include a wide variety of supervised learning methods, both regression and classification, with an emphasis on those that perform well on large feature sets. Ensemble methods are used to combine independent approaches efficiently. Unsupervised and semi-supervised methods demonstrate the power of learning from data without an explicit training target or goal. Reinforcement learning enables effective reward-seeking behaviors in complex environments. The goal is to create models that can make automated decisions from new data or make inferences on unlabeled data to aid in understanding and future prediction models.

Measurable Student Learning Outcomes

1. Understanding concepts of various supervised and unsupervised learning techniques such as classification, regression, clustering, and dimension reduction to solve real world problems
2. Understanding the basics of deep learning for image classification
3. Identifying appropriate Machine Learning based solution (e.g., classification or regression or clustering or sequence learning) to solve a given real-world problem.
4. Writing Python program and use various Python based Machine Learning Libraries (such as scikit-learn) for machine learning.

How to Succeed in this Course

UNT strives to offer you a high-quality education and a supportive environment, so you learn and grow. As a faculty member, I am committed to helping you be successful as a student. The metrics of success for this course is a good grasp on the subject matter evident through participation in the class and successful completion of the assignments and the exams.

To learn more about campus resources and information on how you can be successful at UNT, go to [unt.edu/success](http://unt.edu/success) and explore [unt.edu/wellness](http://unt.edu/wellness). To get all your enrollment and student financial-related questions answered, go to [scrappysays.unt.edu](http://scrappysays.unt.edu).
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 accommodation 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.

Please connect with me through email and/or by attending office hours. During busy times, my inbox becomes rather full, so if you contact me and do not receive a response within two business days, please send a follow up email. A gentle nudge is always appreciated.

Supporting Your Success and Creating an Inclusive Learning Environment

I value the many perspectives students bring to our campus. Please work with me to create a classroom culture of open communication, mutual respect, and belonging. All discussions should be respectful and civil. Although disagreements and debates are encouraged, personal attacks are unacceptable. Together, we can ensure a safe and welcoming classroom for all. If you ever feel like this is not the case, please stop by my office and let me know. We are all learning together. We will discuss our classroom’s habits of engagement and I also encourage you to review UNT’s student code of conduct so that we can all start with the same baseline civility understanding (Code of Student Conduct) (https://policy.unt.edu/policy/07-012).

Required/Recommended Materials


This course has digital components. To fully participate in this class, students will need internet access to reference content on the Canvas Learning Management System and a laptop is preferable. If circumstances change, you will be informed of other technical needs to access course content. Information on how to be successful in a digital learning environment can be found at Learn Anywhere (https://online.unt.edu/learn).

Course Requirements/Schedule

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<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Syllabus, Introduction</th>
</tr>
</thead>
</table>

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The students will be notified by Eagle Alert if there is a campus closing that will impact a class and describe that the calendar is subject to change Emergency Notifications and Procedures Policy (https://policy.unt.edu/policy/06-049).

Assessing Your Work

Students will be evaluated, and assigned final grades, based on their performance on assignments, quizzes and class participations, as follows:

- Homework and programming assignments: 60% (all assignments are equally weighed)
- Final project: 40%

UNT uses a +/- grading scale for final grades and to calculate grade point averages. In this class, grades are assigned according to the following chart. (Other classes might assign grades differently: Be sure to understand the different grading scales in all your classes).

<table>
<thead>
<tr>
<th>Points/Percentage</th>
<th>Letter Grade</th>
<th>Grade Points</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>[90, 100]</td>
<td>A</td>
<td>4.00</td>
<td>A range denotes excellent performance</td>
</tr>
<tr>
<td>[80,90)</td>
<td>B</td>
<td>3.00</td>
<td>B range denotes good performance</td>
</tr>
<tr>
<td>[70, 80)</td>
<td>C</td>
<td>2.00</td>
<td>C range denotes fair performance</td>
</tr>
<tr>
<td>[60, 70)</td>
<td>D</td>
<td>1.00</td>
<td>D range denotes passing performance</td>
</tr>
<tr>
<td>[0, 60)</td>
<td>F</td>
<td>0.00</td>
<td>F denotes failed attempt</td>
</tr>
</tbody>
</table>

In addition to standards for success in courses, there are UNT policies and procedures that you can access on the Student Support Services & Policies page (https://clear.unt.edu/student-support-services-policies).
Grades are based on mastery of the content. As a rule, I do not grade on a “curve” because that is a comparison of your outcomes to others. I do, however, encourage you to find opportunities to learn with and through others. Explore Navigate’s Study Buddy (https://navigate.unt.edu) tool to join study groups. Maximize your learning with our coaching staff at the Learning Center. Focus on areas where you are struggling in this course by attending scheduled study group sessions with me the week before each exam. Forward together!

Every student in my class can improve by doing their own work and trying their hardest with access to appropriate resources. Students who use other people’s work without citations will be violating UNT’s Academic Integrity Policy. Please read and follow this important set of guidelines for your academic success (https://policy.unt.edu/policy/06-003). If you have questions about this, or any UNT policy, please email me or come discuss this with me during my office hours.

Late Assignments and Exams
All the assignments must be turned in on the due dates, which will be announced on the Canvas at least a week in advance before a particular assignment is out. The late assignment will be subject to deduction of marks. Students are well advised not to engage in late assignment practices. Late Exam will not be accepted and result in zero.

Missed Assignments and Exams
Contact the advisor before the exam backed with supported documentation.

Attendance and Participation
Research has shown that students who attend class are more likely to be successful. You should attend every class unless you have a university excused absence such as active military service, a religious holy day, or an official university function as stated in the Student Attendance and Authorized Absences Policy (PDF) (https://policy.unt.edu/policy/06-039). If you cannot attend a class due to an emergency, please let me know. Your safety and well-being are important to me.