CSCE 5216/4930 Introduction to Pattern Recognition

Course Information
Instructor: Dr. Xiaohui Yuan, NTRP F277, xiaohui.yuan@unt.edu

Course Description
Pattern recognition is a classical research area that deals with recognizing patterns (objects) based on their features (traits or appearance). It has seen many applications such as speech recognition, image analysis, insurance fraud detection, DNA sequence alignment, data mining, and network intrusion detection. This course will introduce the knowledge and theory in Pattern Recognition. Following an examination of the statistical foundations of pattern classification, we will survey a variety of statistical paradigms and popular pattern recognition algorithms.

Textbook

Required Textbook:
Christopher M. Bishop, Pattern Recognition and Machine Learning
Springer, ISBN 9780387310732

Optional Reference:
Richard O. Duda, Peter E. Hart, and David G. Stork, Pattern Classification
John Wiley & Sons, New York,
ISBN 0471056693

Topics
• Probability Distributions
• Linear models for regression
• Linear models for classification
• Neural Networks
• Kernel Methods
• Mixture Models and Expectation Maximization
• Graphical Models
Coursework

- **Assignments (40%)**
- **Projects (60%)**

Policies and Grading Scale

- **Late Homework:** Late submissions are not accepted. Extension can only be granted for extreme situations prior to the deadlines and cannot exceed 5 calendar days. The penalty for any late submission is 20%.
- **Attendance:** Attendance will not be taken. Students are responsible for all material covered in class. If a student misses a class, then it is that student's responsibility to obtain notes or other materials from another student.
- Any disagreement on the grades shall be discussed with the instructor within 5 calendar days from the date the papers/homework are returned to the students.

Academic Dishonesty

All students are expected to do their own work. Discussions of concepts are encouraged, but all assignments should be done individually. If sources other than the course textbook and presentations are used for reference—including the Internet, other books, and other people—they should be clearly cited in the submitted work. Violating these policies will result in a zero for the assignment and possibly failing the course. The UNT Center for Students Rights and Responsibilities has more information about university policies for academic dishonesty.

American with Disabilities Act

The Department of Computer Science and Engineering cooperates with the Office of Disability Accommodation to make reasonable accommodations for qualified students (cf. Americans with Disabilities Act and Section 504, Rehabilitation Act) with disabilities. If you have not registered with ODA, we encourage you to do so. If you have a disability for which you require accommodation please discuss your needs with me and submit your written Accommodation Request on or before the fourth class day.

Caveat

I reserve the right to modify the course contents, change the method of assigning grades, including changing the number of assignments or exams, etc. outlined in this syllabus, subject to extenuating circumstance.

SETE

The Student Evaluation of Teaching Effectiveness (SETE) is a requirement for all organized classes at UNT. This short survey will be made available to you at the end of the semester, providing you a chance to comment on how this class is taught. I am very interested in the feedback I get from students, as I work to continually improve my teaching. I consider the SETE to be an important part of your participation in this class.