In The Name of God, The Merciful, The Compassionate

Statistical Pattern Recognition
Department of Computer Engineering
Sharif University of Technology
Spring 2012 – CE-725

Instructors: Hamid R. Rabiee, PhD

Class Hours & Location: Saturday-Monday 13:30 – 15:00 (CE department #201)
Office: CE department #803 (DML Lab) & #804
Phone: 6616 6683
Email: rabiee@sharif.edu
URL: http://sina.sharif.edu/~rabiee/

TAs: Jafar Muhammadi (Head TA)
Office: CE department #802 (VAS lab)
Email: muhammadi@dml.ir
URL: http://dml.ir/muhammadi

Amir Reza Shaban
Email: shaban@dml.ir

Amin Jorabloo
Email: amin_jorabloo@yahoo.com

Mahdieh Abbasi
Email: mahdiehabbasi.cs@gmail.com

Mohammad Javad Hosseini
Email: hosseini.mohammadjavad@gmail.com

Mohammad Reza Zolfaghari
Email: mohamadreza.zolfaghi@gmail.com

Siavash Haghiri
Email: siyavash.haghiri@gmail.com

Course Website: http://dml.ir/?page_id=241 and http://ce.sharif.edu/courses/90-91/2/ce725-1/

Course Objectives: To make the graduate students acquainted with the fundamental concepts of statistical pattern recognition and its applications in computational intelligence.

Course Text: Lecture notes + selected papers + following references:

Grading: Based on Homework, Quizzes, Project, Mid-Term and Final Exams. The grade will be determined by:
- Homework: 15%, Only best 5 homework marks will be considered!
- Quiz: 10%, Only best 8 homework marks will be considered!
- Mini-exam: 5%
- Project: 10%
- Mid-Term Exam: 30%
- Final Exam: 30%

CE 725 – Stastical Pattern Recognition
Hamid R. Rabiee, Spring 2012
Prerequisites: Probability Theory, Stochastic Processes

Course Description: The course includes fundamental concepts of statistical pattern recognition, supervised, unsupervised and semi-supervised classification using; decision theory, linear and nonlinear discriminant functions, statistical classification; parametric & non-parametric methods, unsupervised learning and clustering, fuzzy clustering, support vector machines, artificial neural networks, Hidden Markov Models, feature selection and reduction techniques, cluster validation techniques, kernel based classification/learning and selected advanced topics.

Tentative Course Outline:
<table>
<thead>
<tr>
<th>Date</th>
<th>No</th>
<th>Topic</th>
<th>Comments</th>
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<tr>
<td>90.11.15</td>
<td>1</td>
<td>Overview to the course</td>
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<td>90.11.17</td>
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<td>Feature space and feature selection</td>
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<td>Quiz 2</td>
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<td>90.12.06</td>
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<td>Classification – Introduction</td>
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<td>90.12.08</td>
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<td>Classification – Probabilistic methods</td>
<td>Quiz 3</td>
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<td>90.12.12 – HW1 due date</td>
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<td>Classification – Probabilistic methods</td>
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<td>90.12.26 – HW2 due date</td>
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<td>Classification – Neural Networks (Introduction and concepts)</td>
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<td>Monday (91.01.28) - Midterm Exam</td>
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<td>91.02.02</td>
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<td>Monday (91.04.06) - Final Exam</td>
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Hamid R. Rabiee, Spring 2012
**Course Regulations**

**Attendance**
Attending the class and TA sessions are mandatory.

**Homework Problems**
Homework problems will be handed out on **every other Saturdays** and will be due two weeks later (**on Fridays**). The problems will cover the following week materials so do not expect to cover the whole problem set related materials right after the release. There will be some simple programming semi-projects using MATLAB. Course policy for late submission is mentioned below:
- 50% of the whole point for delivery up to three days after the deadline.
- 20% of the whole point for delivery up to one week after the deadline.
- Do not even think of submission after more than one week delay!

The homeworks grades will be announced three weeks after submission deadline, in the course web page.

**Quizzes and Exams:**
Each **Monday** there will be a quiz, at the beginning of the lectures. Each quiz will cover the facts discussed in the previous week.

The quizzes grades will be announced three days later, in the course web page.

**Statement on Collaboration, Academic Honesty, and Plagiarism**
We encourage working together whenever possible on; homework, working problems in tutorials, and discussing and interpreting reading assignments. Talking about the course material is a great way to learn.

Regarding homework, the following is a fruitful (and acceptable) form of collaboration; discuss with your classmates possible approaches to solving the problems, and then have each one fill in the details and write her/his own solution **independently**. An unacceptable form of dealing with homework is to copy a solution that someone else has written.

We discourage, but do not forbid, use of materials from prior terms that students may have access to. Furthermore, at the time that you are actually writing up your solutions, these materials must be set aside; **copy-editing from other’s work is not acceptable**.

**There will be a zero tolerance policy for Cheating/Copying HW’s.** The first time you are caught, you will receive a zero for the task at hand. If you are caught for a second time, you will fail the course.

In general, we expect students to adhere to basic, common sense concepts of academic honesty. Presenting another’s work as if it was your own, or cheating in exams will not be tolerated.