CS 822 (Fall 2014): Machine Learning

Course Information

- Instructor: Shuiwang Ji
- Office: ECSB 3325
- E-mail: sji@cs.odu.edu
- Lecture: Tuesday, 3:00-5:35PM
- Office Hours: Tuesday, 11:30AM-12:30PM or by appointment
- Lecture Location: ECSB 2120
- Textbooks: (the textbooks will not be followed closely)

Prerequisites

Knowledge of multivariate calculus and linear algebra is required, and some familiarity with probabilities would be helpful though not essential.

Grading

- Assignments: 5 assignments accounting for 35%
- Exams: 2 exams accounting for 50% (each 25%)
- Term paper: a term paper accounting for 15%
Final letter grades will be assigned based on absolute percentage as follows:

- [100, 95]: A
- (95, 90]: A-
- (90, 87]: B+
- (87, 84]: B
- (84, 80]: B-
- (80, 75]: C+
- (75, 72]: C
- (72, 69]: C-
- (69, 0]: F

where [ ] denotes inclusion and ( ) denotes exclusion. The instructor reserves the right to move the thresholds down based on the distribution of final percentages, but they will not move up.

**Make-Up Tests and Late Assignments**

You are expected to submit all assignments on the due date. **Hard-copy is due before class on the due date, and code in electronic copy (if required) is due at the end of the due date.** You cannot be assigned a grade unless you submit the homework/project.

For late assignments, 10% is deducted for each day (including weekend) late for the first week after an assignment is due. An assignment submitted beyond a week will not be accepted. If you cannot attend an examination at its scheduled time, you should contact the instructor prior to the examination with doctor’s notes.

**Class Schedule (Subject to Change)**

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<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Introduction</td>
</tr>
<tr>
<td>2</td>
<td>Basics of probability and linear algebra</td>
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<tr>
<td>3</td>
<td>Dimensionality reduction, PCA, SVD, LSI</td>
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<td>4</td>
<td>K-means, hierarchical, and spectral clustering</td>
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<td>5</td>
<td>Generative models and Naive Bayes</td>
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<td>6</td>
<td>Discriminative models and logistic regression</td>
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<td>7</td>
<td>Linear models for regression and sparsity learning</td>
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<td>8</td>
<td>Support vector machines and kernel methods</td>
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<td>9</td>
<td>Deep learning and neural networks</td>
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<tr>
<td>10</td>
<td>Decision tree and ensemble learning</td>
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Academic Honesty

All assignments are strictly individual and must be your own work. The instructor reserves the right to question a student orally or in writing and to use his evaluation of the student’s understanding of the assignment and of the submitted solution as evidence of cheating. Violations will be reported to the Honor Council for consideration for punitive action. By CS Dept. policy, students found to be in violation of this rule will, at the very least, receive a failing grade in the course and may be subject to stiffer penalties.

Honor Code

All students are expected to abide by the ODU Honor Code. This means that all exams and assignments are to be the exclusive work of the student. An honor pledge will be required on all work which is to be graded.

Educational Accessibility

Old Dominion University is committed to ensuring equal access to all qualified students with disabilities in accordance with the Americans with Disabilities Act. The Office of Educational Accessibility (OEA) is the campus office that works with students who have disabilities to provide and/or arrange reasonable accommodations. “If you experience a disability which will impact your ability to access any aspect of my class, please present me with an accommodation letter from OEA so that we can work together to ensure that appropriate accommodations are available to you.” If you feel that you will experience barriers to your ability to learn and/or testing in my class but do not have an accommodation letter, please consider scheduling an appointment with OEA to determine if academic accommodations are necessary. The Office of Educational Accessibility is located at 1021 Student Success Center and their phone number is (757)683-4655. Additional information is available at the OEA website: http://www.odu.edu/educationalaccessibility/