Machine Learning Final Project

CIS 4526/5526 – Machine Learning, Fall 2017

For this project, you will select a problem relevant to machine learning, implement a solution, and discuss the results of your efforts during an in-class presentation. (CIS 4526 students not taking the class for Honors credit may work in pairs.) Each complete project will consist of (1) implementation, (2) experimentation, and (3) discussion. To ensure progress toward a complete, reasonable final project, there will be graded intermediate milestones. No credit will be given to late milestone submissions. However, each milestone must still be submitted to receive feedback and *to be eligible for credit for subsequent milestones*.

Milestone #0: Project Plan [35 pts] (Due: 11/2)

This milestone (after revisions and any corrections) serves as our agreement on the project plan. You must submit a document (roughly 1 page), which includes the following information:

- Project idea
- Data set description
- Code you plan to write and and libraries you plan to use
- Evaluation criteria and baselines for comparison
- Planned work competed by ms1 (*Experimental results of some kind are expected here.)*
- Collaboration plan (if applicable)

This milestone will be graded on the reasonableness and completeness of this document. Points will be deducted for not describing, in detail, the experimental plan and for overestimating the difficulty of the components.

There are 3 possible outcomes to the grading of this milestone: (1) accepted as-is, (2) accepted with modification, and (3) sent back to the student to resubmit. Here are some tips for a successful first submission:

- Make clear where the expected challenges lie (e.g., representation, problem size, coding).
- In most cases, running your algorithm on more data doesn't increase the complexity of the project
- Simply re-implementing an algorithm (without additions or modifications) for which there are many available versions would likely not be accepted as-is.
- It is not ok to just say you're going to use “some algorithm". You need to be ***clear*** about the ***specific*** approach you plan to take. Even if you chose something that we have yet to cover in class, you should familiarize yourself enough to write up a plausible proposal.
- Think carefully about where you’ll be obtaining data and how much. Having no idea or only a small number of examples will result in a resubmission.
- Provide a reasonable baseline to compare your method.

The majority of the score for the final project will be determined by the in-class presentation. Completing all or parts of your expected proposal does not guarantee any minimum grade letter.

Milestone #1: Project Checkpoint [35 pts] (Due: 11/17)

For this milestone, you must submit your well-commented code in its current state, your algorithm description, any roadblocks that you have come upon so far, your experimental plan, and what you have so far completed. In addition to grading the efficiency and the legibility of the code, the majority of the credit on this assignment will be based on my

assessment of how closely your code matches your proposed design and how likely it is I think you will be able to complete the project by the due date.

Milestone #2: Project Abstract [15 pts] (Due: 12/4)

You will submit a 200 – 300 word abstract describing your problem, solution, and (expected) results. The abstract should provide enough information for a student in the course to understand the problem and your approach. The attached document provides tips and examples for writing abstracts. This milestone will be graded how accurately it reflects the material presented, clarity, and comprehensiveness.

Milestone #3: Project Code [25 pts] (Due: 12/4)

You will submit your project code and a report describing how to run the code and recreate the results that you present. If your project requires an extremely large data set, you should include links to where the data can be obtained and a small representative data sample. This milestone will be graded based on the Code Submission Guidelines described in the course syllabus and how closely it matches your proposal (ms0) and presentation (ms4).

Milestone #4: Project Presentation [90 pts] (Due: 12/6)

You will present a conference-style presentation[1] on 12/7 during the assigned final exam period. Each talk will be allotted 7 minutes (5 minutes for presentation, 2 minutes for questions). The time limits will be strictly enforced. Your grade for this milestone will be mainly determined by your classmates, so you'll want to make sure that your presentation is clear, **well-rehearsed**, and describes your project and results effectively. These few minutes will be your only chance to present the entirety of your final project. It is highly recommended that you rehearse your presentation (multiple times) and put effort into delivering a polished, professional talk. Your score for this milestone could be negatively affected by presenting work different than the proposal or misrepresenting your work and/or results.

To minimize wasted time between presentations, we will run **all** of the presentations on the classroom PC, so you will need to submit your presentation slides via Canvas by 11:59pm on 12/6. Deductions will be made for presentations not submitted on time or presentations with video or other display errors. So, be sure to test your presentation on a Temple lab machine (class podium or computer lab) for codec compatibility and/or to make certain everything looks right.

Additionally, part of this score is based on participating during the presentations (e.g., asking questions). The set of abstracts will be available prior to the presentations, so everyone will have an idea of the types of projects that will be presented.

[1] This site gives good tips on giving a conference-style presentation: http://pages.cs.wisc.edu/~markhill/conference-talk.html