

CS151 - Final Project

Fall 2010

Overview

In this class we have looked at a number of techniques, and have examined a few in depth in assignments. The purpose of this assignment is to explore a topic we have examined (or not examined - but related to AI) that's interesting to you in more depth as a mini research project. You will choose a topic, write a proposal, and then complete what you propose over the rest of the semester. You will also have to give status updates, write a final report, give a final presentation and review others' reports along the way.

The project should follow the following guidelines:

- Your project should relate to something we have or will talk about in class. I will give some examples of past projects in class. Feel free to ask me if your idea is appropriate.
- You can develop a technique or an application, or both. For example, you might implement approximate inference for Bayes nets, or you might build a NB spam filter or an HMM part of speech tagger.
- You must evaluate the success of your approach. Even if you develop a technique, you need to find some reasonable way of determining how well your approach works.
- Your project should be in a pair or group of three. If you'd like to do it solo, please come talk to me.
- You should aim for a project that will take about 20 hours of coding work per team member (about 5 hours per week). This is not a lot of work, and things always take longer than you expect, so try to be conservative.

Schedule

date	description
10/29	Literature review (solo - see assignment on course page)
11/5	Project proposal
11/15	Status report 1
11/17	
11/29	Status report 2
12/7	Paper draft
12/10	Reviews
12/15	Final paper and presentation

Project proposal [10 points]

(Due in dropbox in pdf by 6 pm 11/5)

Your first task will be to come up with your project group and figure out what you'd like to work on. Your project proposal should include the following information:

- Members of the team. I'm strongly encouraging groups of 2 or 3. If you want to work solo, please come talk to me.
- A one paragraph description of your project including what you hope to accomplish and how you will evaluate your approach. You should think about what would be an appropriate way for evaluating your success. We've seen a few ways of evaluating approaches for both the NB classifier and HMM sketch recognition, but come talk to me if you're having problems thinking about this part.
- What you plan to accomplish by status report 1 and status report 2. Try and break the project down into intermediate steps so that you can start working on it now.
- What resources you will use/need including code, data, etc. You may use any resources you can find, including code you have written for this class or other classes, code provided with the book, data you find on the web, etc. If you would like a resource and can't find it, ask and I might be able to help you. However, you must have found ALL resources by the time you submit your proposal. Come talk to me (early) if you're having trouble finding appropriate data.

- Two papers in the literature (full citation) that tackle the same problem (these may or may not be the same two that you read for your literature review).

Status reports [5 points each]

(Due at the beginning of class on dates specified, printed out)

In your project proposal you will specify a list of intermediary goals/accomplishments. A status report is a one paragraph description of the current status of the project, including to what extent you accomplished your proposed tasks for that report and any problems or issues that have arisen.

Paper [90 points]

Draft due by 5pm on 12/7 in pdf in dropbox

Final paper due at beginning of exam period on 12/15, printed out

Your paper must be complete enough for me (or anyone else) to fully understand what you did. I would like you to think of this as a real (potential) submission to a conference or workshop. It is unlikely that you can complete enough work to have a submittable paper in this short time (most workshop projects take several months to develop and write up, if not several years!). But if you get excited about your project, I would encourage you to continue working on it after the end of the semester and plan to submit it to a AAAI workshop or symposium in the future.

We will use the AAAI paper format:

<http://www.aaai.org/Publications/Author/author.php>

The website has templates for both latex and word, either of which are fine. Your paper will be short (**no more than 3 pages**). Even though it is short, I expect it to be well written, well organized and present what you've done (including your results) clearly and concisely. You should include at least one table or figure displaying your results (though more may be useful).

You may organize the paper however you like, but a common approach would include the following:

- Abstract: Gives a very high-level view of the problem, approach and results. An abstract is almost never more than a paragraph.
- Introduction: Describe the problem and motivate why the problem is interesting/useful.
- Algorithm description: Clearly describe your algorithm including any challenges you encountered.
- Results: Describe your data, experimental setup, evaluation criterion and how well your system performed. You should spend some time discussing the results, including if anything was surprising or interesting.
- Conclusion: A brief summary of the paper including any challenges, where to next and any high-level comments you have at the end of the project.

Reviews [10 points]

Due by 5pm on 12/10 in pdf in dropbox

Each of you will be asked to review 1-2 papers written by other groups in your class. Your review will be similar to previous ones we've done in class, but should be easier since the papers should be shorter and should be on topics you're familiar with. For these reviews it will be important that you give very specific feedback about things that were good/bad/unclear in the paper since the authors will use your feedback to improve their final paper.

Presentation [20 points]

(All presentations will be during our exam period on 12/15)

Each group will give a short (10-15 mins) presentation of their work during our final exam period. At a high-level, your presentation will have a similar flow to your paper. Your presentation must include the following information:

- Problem
- Motivation: Why is what you did useful?
- Approach: How did you solve the problem?

- Results: How well does it work?

Grading

The project will represent most of your work between now and the end of the semester, so don't get too concerned that there are a lot of things to do. You'll have 6-7 weeks to accomplish the tasks, which should be plenty of time if you stay on top of things.

- Project proposal (20 points) - Meets specifications above.
- Status reports (5 points each)
- Paper draft (10 points) - Do you have a reasonable draft in place for other students to review?
- Paper reviews (10 points)
- Project and paper (90 points)
 - How creative is your project/solution?
 - How complete is your project? Did you accomplish what you set out to do?
 - How well your solution works and, more importantly, how you evaluated it
 - Paper meets specifications above
 - The quality of your write-up, including addressing reviewers' comments
- Presentation (20 points)
 - Covered content
 - Organized and well-prepared
 - Presentation style