

Final Project Guidelines

*Handed Out: April 29, 2012**Due: May 9, 2012*

- The final project is due by April 9th at 11:59p. Modulo extenuating circumstances, no late projects will be accepted.
- Your project should be ~7-10 pages in length, 11 point font, single column, single-spaced. However, you can have as many pages of references as you would like.
- Please submit an electronic copy of your report via email (ksmall11@bu.edu). If you are submitting any code, this should be done via `gsubmit` and instructions for running this code should be both in the email and the report (copy and paste is fine). ☺
- I will be grading the projects as they are received. Therefore, your project will receive greater attention (assuming you want this) if it is turned in before the final exam. However, I will be sending everyone feedback once I complete all of the grading responsibilities.

Below are some basic guidelines regarding the writeup for your final project. Please note that these are only guidelines – the form of your report should be tailored to the specific problem you are investigating. While your goal should be to highlight the most interesting aspects of the work you have completed (and therefore the structure is completely up to you), I would generally expect that the report follows a basic “IMRAD”-like structure. Furthermore, while I encourage creativity, I encourage you to make your report look like a publishable article. If you would like, you may use the L^AT_EX style files from any major venue or publisher (e.g., ACL, ICML, NIPS, ACM, LNCS, etc.) – but this is not required. Anyway, below are aspects I will be looking for; however, please do *not* believe that you should use the headings below as the exact headings of your paper (although some will be the same...I assume).

1 Introduction

Motivate and contextualize the problem you are investigating.

- What is the basic problem?
- Why is this problem important?
- How does this work fit amongst related work in this area?

Provide a high level view of how you are addressing the problem and summarize your contribution.

- What is your approach?
- Why did you choose this approach?
- Summarize the basic results and conclusions in 1-3 sentences.

2 Problem Definition

2.1 Task Definition

Formally introduce the model and/or model you are investigating and define the notation you will be using throughout the report. Precisely specify the inputs and outputs of your problem. Furthermore, elaborate on why this is an interesting and important problem (particularly if you are doing a survey or “formal” proposal).

2.2 Algorithmic Specifications

If you are studying a specific learning algorithm or set of learning algorithms, this is the appropriate place to present this. Describe the algorithm(s) you will be using in sufficient detail. Pseudocode, figures, and/or motivating examples are frequently useful here.

2.3 Expectations

This is where you should clearly state your hypotheses. In the case of an experimental study, discuss what you hope to achieve and what you expected the results to be. How do you expect each algorithm to behave and why? Discuss why you chose this specific experimental design to investigate your problem of interest. If you are doing a “formal” proposal, this component would be particularly important.

3 Experimental Methods and Results

3.1 Experimental Methodology

What are the criteria you will be using to evaluate your method? Elaborate on the details of your experimental design. How does the training/test data used represent a *real-world* setting? What experimental results will be collecting and how will you be analyzing it?

3.2 Results and Analysis

Present the quantitative results of your experiments. Of course, I would really appreciate graphical presentations of data although tables are also appropriate in many settings. What are the basic results revealed by your experiments. Are the results statistically significant?

3.3 Discussion

Was your hypothesis supported? Compared to other methods, what were the strengths/weaknesses of your method? How can the results be explained in terms of properties of the algorithms and/or data? If you had infinite resources and/or information, how could you conduct more convincing experiments?

4 Theoretical Evaluation and Analysis

If your study is more of a theoretical contribution, survey, or expanded proposal – this would be the section for your analysis and contribution. Please make it clear what is derived from known work and what should be reconsidered by your analysis/presentation. What is novel from your perspective of the problem. I welcome position statements here – particularly if they are well supported by convincing arguments.

5 Related Work

One aspect of this project that I believe important is your knowledge of some of the related work (as I want you to read research papers – but specifically those you find interesting to your work). This is another opportunity to contextualize your work, but from a more contrastive perspective. How is your problem and/or method unique? Why is your problem and/or method better? Please be aware that I read more papers than just about anybody you know, so while I do not expect this to be exhaustive, I do expect you to be aware of the “major” works. ☺

6 Future Work

What are some of the significant shortcomings of your method? For each shortcoming, propose how you might be able to overcome them with more time and/or resources. Given what you have learned, what might you do differently?

7 Conclusions

Briefly summarize the important results and conclusions presented in the paper. What is the take away message of your work?

I will be evaluating your work along many dimensions including novelty, effort, clarity of presentation, completeness, interestingness,¹ etc. However, I *strongly* encourage you to make a *clear, interesting, and convincing* argument. Please be aware that if you turn in your project after the final, I will be spending 20-30 minutes reading each project.² Therefore, if you can make your project stand out (although I will not be grading on a curve with respect to the projects), I would be most appreciative.

¹And you thought patent law doesn't need reforming United States Patent Application 20060242139.

²Although I review tons of papers, so I am actually pretty good at this.