

CS4701 Fall 2011: Practicum in Artificial Intelligence

Final Report

Due Date: Final report due (hardcopy to TA and PDF in CMS) Friday December 2
Final oral presentation in class, Tuesday, November 29

Your final project report summarizes your activities and outcomes during the entire project. It should describe all your project activities, including activities that were not in the original proposal and activities that turned out to be fruitless. It should clearly describe the results and their evaluation

Code. The project's documented source code, executables, data, and user-guide should be included in a single zip file and uploaded into CMS. Do not include any source code not written by you (e.g. external libraries). Include a *readme.txt* file that explains which file is which. The content should match the information listed in the appendix section described below.

Oral presentation. The project final report is accompanied by a 10-minute oral presentation. This will be during class or after class, as necessary (sign up for a timeslot on the wiki). The presentation should contain at least one slide for each of the sections and subsections listed below, and be brought to class in PowerPoint or PDF.

Submission. The final report should be approx. 3000 words. Include pictures and diagrams where appropriate. The report should be submitted in hardcopy (stapled) directly to your TA, as well as uploaded into CMS (in PDF format).

Content. The report should contain the sections listed below. This roughly follows the format of a scientific paper. Be sure to provide citations to your bibliographical sources throughout. If you use a software package list that in your references as well.

1. **Title, authors, and affiliations:** Title of project, team members and their affiliation (major and year).
2. **Abstract:** A brief summary of the report. This is not an introduction – it should be complete. Include 1-2 sentences for each of the items below, up to and including conclusions.
3. **Introduction:** Motivate and abstractly describe the problem you are addressing and how you are addressing it. What is your basic approach? A short discussion of how it fits into related work in the area is also desirable. Summarize the basic results and conclusions that you will present.
4. **Problem definition.** Precisely define the problem you are addressing (i.e. formally specify the inputs and outputs).
5. **Method:** Describe in reasonable detail the algorithm you are using to address this problem. A pseudo-code description of the algorithm you are using is frequently useful. If it makes sense for your project, trace through a concrete example, showing how your algorithm processes this example. The example should be complex enough to illustrate all of the important aspects of the

problem but simple enough to be easily understood. If possible, an intuitively meaningful example is better than one with meaningless symbols.

6. **Related work.** Briefly explain who else worked on related problems in the past and what methods they used. Explain if you are using similar methods, or if your approach is different and if so – how (either is ok).
7. **System Architecture and implementation** Describe how you implemented your system and how you structured it. This should give an overview of the system, not a detailed documentation of the code. The documentation of the code is part of the code you hand in. You might want to comment on high-level design decisions that you made. Also explain how you obtained your data and any pre-processing you did to it.
8. **Experimental (or Theoretical) Evaluation.**
 - a. Methodology: What are the criteria you are using to evaluate your method? Describe the experimental methodology that you used. What are the dependent and independent variables? For projects in machine learning, what is the training/test data that was used, and why is it realistic or interesting? Exactly what performance data did you collect and how are you presenting and analyzing it? Comparisons to competing methods that address the same problem or to variations of your own algorithm are particularly useful.
 - b. Results: Present the quantitative results of your experiments. Graphical data presentation such as graphs and histograms are frequently better than tables. Explain what are the basic differences revealed in the data. If your method is stochastic or you analyze multiple datasets, calculate mean and standard error for every quantitative performance result you show based on multiple runs.
 - c. Discussion: Is your hypothesis supported? What conclusions do the results support about the strengths and weaknesses of your method compared to other methods? How can the results be explained in terms of the underlying properties of the algorithm and/or the data.
9. **Future work.** What are the major shortcomings of your current method? For each shortcoming, propose additions or enhancements that would help overcome it.
10. **Conclusion.** Briefly summarize the important results and conclusions presented in the paper. What are the accomplishments and failures of your method? How will your results improve future research and applications in the area?
11. **References.** A numbered list of all books, articles, and web pages you used in your work or that you cited in your report. Each item must be cited from somewhere within the text. When citing a URL, include date visited. When citing a commercial product, list the company.
12. **Acknowledgements.** List any people *not* on the team who helped you with your project: Your TA, other people you consulted with or had useful discussions (say in a word or two what they did), people who proofread your report, and any external code you used (libraries etc.)
13. **The Team.** A table listing the names of the people who worked on the project, and who did what.
14. **Appendix.** A table listing all the filenames of files included in your code submission and a brief description of their contents.