

# CS573: Project

Due date: Wednesday December 15, 4pm to CS mailroom

## Final Report (30 pts)

Write a 6-8 page report on your research project.

You must formulate and test at least **two** specific hypotheses in your project. If you are investigating a new algorithm, the hypotheses can involve comparing different versions of your system (e.g., with a component turned off). If you are comparing existing algorithms the hypotheses should involve both aspects of the data and the algorithms (e.g., as data characteristics vary how does relative performance change?).

Below are guidelines on how to write-up your report for the final project. Please use it as a general guide for structuring your final report.

### 1. Introduction (3 pts)

Motivate and abstractly describe the problem you are addressing and how you are addressing it. What is the problem? Why is it important? 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.

### 2. Problem Definition (2 pts)

Precisely define the problem you are addressing (i.e. formally specify the inputs and outputs). Elaborate on why this is an interesting and important problem.

### 3. Algorithm/System Definition (5 pts)

Describe in reasonable detail the algorithm(s) or system you are using to address the problem. A pseudocode description of the algorithm or system is frequently useful. Trace through a concrete example, showing how your algorithm processes the 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.

### 4. Methodology (5 pts)

What data are you using to evaluate your method? What specific hypotheses are you testing? Describe the experimental methodology that you used. What are the dependent and independent variables? What is the training/test setup that was used? What external evaluation criteria did you use to test your hypotheses? Comparisons to competing methods or control conditions that address the same problem are particularly useful.

### 5. Results (5 pts)

Present the quantitative results of your experiments. Graphical data presentation such as graphs and histograms are frequently better than tables. What are the basic differences revealed in the data. Are they statistically significant?

6. Discussion (5 pts)

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.

7. Related Work (3 pts)

Answer the following questions for at least three pieces of related work that addresses the same or a similar problem. What is their problem and method? How is your problem and method different? Why is your problem and method better?

8. Conclusion (2 pts)

Briefly summarize the important results and conclusions presented in the paper. What are the most important points illustrated by your work? How will your results improve future research and applications in the area?

9. Bibliography (0 pts *but you will be docked 2 points if you don't have one*)

Be sure to include a standard, well-formated, comprehensive bibliography with citations referring to previously published papers in the scientific literature that you utilized or are related to your work.