LaTeX Template for ML Final Project Report

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Abstract

An abstract should concisely (less than 300 words) motivate the problem, describe your aims, describe your contribution, and highlight your main finding(s).

- Your final report should be written in the same style as an ML research paper, and ideally written in a way that a fellow ML student could understand. It should be a PDF created using this template.

- Your report should be **8 pages** (not including references).

- You must include a link to your GitHub repository for the project as the first footnote on the first page. [1]

- As a reminder, the midterm report template included links to resources to help you improve your technical writing. You can use these, and previous feedback you've received, to improve your technical writing.

- Your final project report will be graded holistically, taking into account many criteria: originality, performance of your methods, complexity of the techniques you used, thoroughness of your evaluation, amount of work put into the project, analysis quality, writeup quality, demonstrating strong understanding, etc. You will also receive some brief feedback on your report.

- All final reports will be posted on the course website as a blogpost and presentation recording.

- Your final report should contain the following sections (though you can use a different structure if you prefer). Sections with an asterisk (*) were *not* part of the milestone.

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[1] Here's a link to my GitHub account: https://github.com/sjankin and Hannah's https://github.com/hannahbechara. Make sure that your repository is accessible to us!

1. *Introduction

The introduction explains the problem, why it's difficult, interesting, or important, how and why current methods succeed/fail at the problem, and explains the key ideas of your approach and results. Though an introduction covers similar material as an abstract, the introduction gives more space for motivation, detail, references to existing work, and to capture the reader's interest.

2. *Related Work

This section helps the reader understand the research context of your work, by providing an overview of existing work in the area.

- You might discuss: papers that inspired your approach, papers that you use as baselines, papers proposing alternative approaches to the problem, papers applying your methods to different tasks, etc.

- This section shouldn't go into deep detail in any one paper (for example, there probably shouldn't be any equations) – instead it should explain how the papers relate to each other, and how they relate to your work.

3. Proposed Method

This section details your approach(es) to the problem. For example, this is where you describe the architecture of your model, and any other key methods or algorithms.

- You should be specific when describing your main approaches – you probably want to include equations and figures.

- You should also describe your baseline(s). Depending on space constraints, and how standard your baseline is, you might do this in detail, or simply refer the reader to some other paper for the details.

- If any part of your approach is original, make it clear (so we can give you credit!). For models and techniques that aren't yours, provide references.

- If you're using any code that you didn't write yourself, make it clear and provide a reference or link. When describing something you coded yourself, make it clear (so we can give you credit!).

4. Experiments

This section contains the following.

Data: Describe the dataset(s) you are using (provide references). If it's not already clear, make sure the associated task is clearly described.

Software : Briefly list (and cite) software software you used.

Hardware : If relevant, list hardware resources you used.

Evaluation method: Describe the evaluation metric(s) you used, plus any other details necessary to understand your evaluation.

Experimental details: How you ran your experiments (e.g. model configurations, learning rate, training time, etc.)

Results: Report the quantitative results that you have found so far. Use a table or plot to compare multiple results and compare against baselines.

Comment on your quantitative results. Are they what you expected? Better than you expected? Worse than you expected? Why do you think that is? What does this tell you about what you should do next? Including training curves might be useful to discuss whether things are training effectively.

5. *Analysis

Your report should include some qualitative evaluation. That is, try to understand your system (how it works, when it succeeds and when it fails) by measuring or inspecting key characteristics or outputs of your model.

- Types of qualitative evaluation include: commenting on selected examples, error analysis, measuring the performance metric for certain subsets of the data, ablation studies, comparing the behaviors of two systems beyond just the performance metric, and visualizing attention distributions or other activation heatmaps.

- The Practical Tips lecture notes has a detailed section on qualitative evaluation – you may find it useful to reread it.

6. *Conclusions

Summarize the main findings of your project, and what you have learnt. Highlight your achievements, and note the primary limitations of your work. If you like, you can describe avenues for future work.

7. Acknowledgements

List acknowledgements if any. For example, if someone provided you a dataset, or you used someone else's resources, this is a good place to acknowledge the help or support you received.

8. Contributions

Describe the contributions of each team member who worked on this project. You should write a brief summary of what each team member did for the project (about 1 or 2 sentences per person). We will read these descriptions and cross-reference with GitHub contributions in your project repository. For almost all teams, it will have no effect (team members all receive same grade), but for teams with very unequal contribution, we may investigate and/or give different grades to team members.

9. References

Your references section should be produced using Bib-TeX.

10. *Appendix

If you wish, you can include an appendix, which should be part of the main PDF, and does not count towards the 8 page limit. Appendices can be useful to supply extra details, examples, figures, results, visualizations, etc., that you couldn't fit into the main paper. However, your grader does not have to read your appendix, and you should assume that you will be graded based on the content of the main part of your paper only.