

CPSC 532M Final Project

1 Group Size

The project can be done in [groups of 2-3](#), no exceptions.

2 Due Date

The project is due on [December 19th](#). If any of your group members have a late day remaining, you can hand it in on December 21st. [Projects will not be accepted after December 21st](#).

We will be marking projects as they come in. So, [only submit the final version](#) as otherwise we may mark a preliminary version.

3 Deliverable

[The deliverable for the final project is a PDF file](#). The PDF file should be made using L^AT_EX, using the NIPS 2018 style file:

<https://nips.cc/Conferences/2018/PaperInformation/StyleFiles>.

[Uncomment the “nipsfinalcopy” line](#) and use the [names and student numbers of your group members](#) in the author field.

[You are restricted to 6 pages of text in this format](#). But the following do not count against the page limit: figures, tables, reference list, and proofs. So you can submit a 10-page paper, but it must include at least 4 pages must of citations, figures, tables, or proofs. There is no need to fill up the page limit. If your project fits in 4 pages of text, then go for it. Short papers are actually more likely to be read carefully in academia.

4 Submission Details

[Please follow the instructions below to submit your project](#):

1. One team member should create a private repository within the [github.ugrad.cs.ubc.ca](#) universe (not [github.com](#) or [github.ubc.ca](#)).
2. Whoever created the repo should add their teammates as collaborators to the repo.
3. Whoever created the repo must also add [@schmidt](#) and [@mgelbart](#) and [@c6v8](#) as collaborators to the repo.
4. Before the due date, one team member must post a link to the project repo at:
https://github.ugrad.cs.ubc.ca/CPSC340-2018W-T1/532M_project_home/issues/1
This post should also tag all the group members by ugrad ID, like in the example given there.
5. The repo should include your project.pdf file, described in the deliverables section above.

6. Failure to follow these instructions may result in a grade deduction.

5 Marking Scheme

There are three components to the marking scheme. These components and their weight are:

- 50%: Paper organization.
- 20%: Writing style.
- 30%: Contribution.

More details on each of these items are given in the following sub-sections.

5.1 Contribution

The first 70% of the mark above is based on writing a clear paper that follows the structure and addresses the relevant issues in a generic scientific/engineering publication. That part is largely independent of the project you choose. The final 30% percent of the mark is based on the “contribution” of the project, which is what doing this project adds to the world. Note that there is no expectation that the course project yields a novel or high-impact result, but it should still have some contribution. Also, unlike publications, negative contributions are ok. For example, “existing supervised learning methods are not well-suited for this task” is an ok contribution. Here are some ways to argue that the paper has made a contribution:

- The paper shows that some methods work better than others for a specific application (e.g., random forests work better than logistic regression).
- The paper shows that machine learning is well-suited for a particular type of prediction problem, or that the methods you tried do not work on that type of problem.
- The paper shows how you can solve something much more efficiently or much more accurately than other reasonable approaches.
- The paper shows a new theoretical result, or argues that an existing theoretical technique can not be applied in a straightforward way to a problem.
- The paper could/did make a software package that many people might use. Or it added components to an existing package.
- The paper provides a summary of how existing works on a particular topic are related to each other, and gives insights about where work on this topic is going.

You should explicitly state your contribution in the introduction of the paper, and the paper should argue that the course project does make a contribution. (One of the worst things you can do in your academic writing is leave the reader unclear about what your contribution is.)

5.2 Paper organization

Half of the mark for the course project will be based on whether your report satisfies a set of standard criteria for a scientific/engineering publication. For most projects, I *strongly* suggest using the following traditional outline:

1. Introduction: Clearly state the problem being addressed. **Explain why it is an important problem to work on.** At a high level, briefly summarize what the limitations of existing approaches that your work will be addressing. At a high level, summarize what the contribution of your project is.

2. Related Work: Identify at least three publications on related topics; usually these will be papers that have worked on slightly different problems or papers that have proposed an approach to your problem that is not fully satisfactory. For each paper, briefly say either how the problem addressed is related and/or different (if they address a different problem) or why it doesn't solve the problem you are working on (if it addresses the same problem). **You do not want the reader to be confused about whether the problem you are addressing is already solved by related work.**
3. Description and justification of what you did (divided into sub-sections): There is a lot of flexibility here, and it will depend on the type of project you are doing. For example, if you are applying standard machine learning methods to a new dataset or doing a Kaggle competition, you should have one sub-section describing the dataset and why you think machine learning could help, and one sub-section stating the methods you will try and why you think these are appropriate methods (you do not have to go into detail describing the methods if they are covered in class). If you are extending an existing technique, you should have one sub-section describing the existing technique, and one sub-section for each of the extensions you explored. If your project has a theoretical component, you should have one sub-section discussing the assumptions, one sub-section describing the results, and one sub-section describing implications.
4. Experiments and/or analysis (if you have an experimental component): Describe each experiment that you did. Say what each experiment is trying to test. Ideally, each experiment should only try to test one thing and you should control for as many other factors as possible. Subsequently, summarize the result of your experiment, in both the text and in a nice visual form such as a figure; in most cases, **a table with a huge list of numbers is not a nice way to summarize information.**
5. Discussion and future work: State the main conclusions that are obtained from this course project. List at least one strength and one weakness of your contribution. Briefly state what you would do with more time.

50% of your mark will be based on whether the sections of your project report achieve the goals described above for each section. For example, for the introduction: (i) is the problem clearly state? (ii) is it explained why the problem is important? (iii) are the limitations of existing approaches briefly summarized?, and (iv) is the contribution of the project briefly summarized?

There are other possible ways to structure your project, and for many papers this is not the right choice. For example, if you are doing a [perspectives paper](#) then the organization might be:

1. Introduction: Clearly state the problem being addressed. Explain why it is an important problem. At a high level, briefly summarize the history of the works that will be discussed in the project.
2. Review: Go through the different works in some logical order, such as chronologically or by going from simple to complex models. Do not just list the methods, but say how they relate to each other (going through the strengths/weaknesses of the different methods, both in comparison to each other and compared to an ideal method that solves the problem).
3. Discussion: Discuss the trends that have occurred over time. Speculate about where the next steps in the trend could lead. Point out issues that are not properly addressed by existing methods. State some interesting directions to explore, or opportunities to use existing tools in new applications.

Other structures would be more appropriate for different types of projects, but this portion of the mark will be based on whether the project is logically structured: there should be some introductory material saying *why* this project is interesting and what the contribution is, some discussion of the literature and possibly presenting a new idea/approach, and then a discussion of where this fits into a larger view of science/engineering. If you are not sure how to structure your paper for the particular type of course project you are doing, message me on Piazza and I can give you some guidance.

5.3 Writing Style

20% percent of the mark is based on writing style. I put some notes on writing clearly here:
<https://www.cs.ubc.ca/~schmidtm/Courses/Notes/writing.pdf>

6 Project Repository

I'll post some previous projects to Piazza as examples. These will be from CPSC 540, as this is the first time we're projects in this class, but the format is similar.