ECE 324 Project Final Report and Rubric

The final report is a complete summary of the work you did in the project. It describes what you have done and why, what your results are, and an interpretation of your results. It will include the ethical analysis, as described by Professor Irish earlier in the term.

There is a word limit of maximum of 2000 words, with a 1% penalty for every word in excess of the 2000 limit. **Count the words in your document, compute the penalty, and put it on the front page. If count is missing, a grade will be deducted** The count and penalty are not to be included in the word count, nor are figures with illustrations or references.

Submitting the Report and Committing Source Code

Submit your final report **as a group** on Quercus to the 'Final Report' assignment by Tuesday December 3rd, at 9pm. You should also **commit your final source code to your course Master GitHub repository** by that same time. There should be no commits to the Master branch after the deadline.

There is a penalty-free grace period of one hour past the deadline. Any work that is submitted between 1 hour and 24 hours past the deadline will receive a 20% grade deduction. No other late work is accepted. Quercus submission time will be used. Please double-check that you have successfully submitted.

Rubric

Permissions

On a separate page (not included in the word count) indicate if both group members will grant or deny permission to post the following three things on a course website (similar to http://www.eecg.utoronto.ca/~jayar/mie324/).

- permission to post video: yes/no OR wait till see video
- permission to post final report: yes/no
- permission to post source code: yes/no

Introduction (2 points)

A brief description of the goal and motivation of the project. This should include why the goal is interesting or important, and why machine learning is a reasonable approach to it. Note that the expectations for the sections that also appeared in the proposal are higher, because you've had time to reflect and revise.

- 2/2 An introduction that clearly describes the project goal, why the project is interesting and/or useful, and convincingly describes why machine learning is an appropriate tool for the task.
- 1/2 The introduction describes the project, but is vague or has information that is factually incorrect.
- 0/2 The introduction does not make it clear what the specific goal of your project is.

Illustration / Figure (2 points)

A figure or a diagram that illustrates the overall model or idea of your project. The idea is to make your report more accessible, especially to readers who are starting by skimming your work. You will not be penalized for hand-drawn illustrations – you are graded on the design and illustrative power.

- 2/2 A well thought-out figure that communicates the core idea of your project and architecture immediately.
- 1/2 An illustration that does the job, but is not particularly clear, or possibly too wordy.
- 0/2 The illustration is significantly lacking in some respect, or contain factual inconsistencies or inaccuracies.

Background & Related Work (2 points)

A description of 1-2 related works in the field, to provide reader a sense of what has already been done in this area, e.g. papers or existing products/software that do a related thing.

- 2/2 Briefly describes 1-2 prior work related to your project to put your project into context. Your descriptions need not be complete, but should contain important work, especially those recommended by your instructors or TA.
- 1/2 Background that has omissions or factual incorrectness, but otherwise places your project into context.

- 0/1 Background contains too much information not related to your project, or has major omissions of content provided to you by your instructor or TA., or does not sufficiently put your project into context.

Data and Data Processing (4 points)

Describe the data that you have collected and cleaned. Be clear and specific when describing what you've done, so that a classmate can reproduce your work. Show some statistics and examples of your data.

- 4/4 Clearly describes sources of data, and the steps you took to clean and format your data. Statistics and data example are well-chosen, and gives readers a "feel" for your data.
- 3/4 Mostly clear description, but some aspects of the data processing steps are vague. Statistics and data example are somewhat illustrative/helpful.
- 2/4 Vague description or missing key information about where your data comes from or what you did. No example data shown, or the ones shown are not illustrative.
- 1/4 Incomplete information.

Architecture (4 points)

A description of the final neural network model architecture. Do not describe all the intermediate models that you tried. Instead, present the model (or models) whose quantitative results you will show. These should be your most interesting models. Be as specific as you can while being concise. Readers should be able to reproduce a model similar enough to yours and obtain a similar performance.

- 4/4 Clear and concise description of your model architecture, so that a classmate can reproduce a model similar to yours that will perform similarly.
- 3/4 Good description of your model architecture, but with either not enough detail to be reproducible, or too much unnecessary detail not useful for reproducing your model.
- 2/4 Some issues with the description (inconsistencies, factual inaccuracies)
- 0/4 Unclear description of the type(s) of neural network model that you will use, or a choice that is inconsistent with your problem.

Baseline Model (2 points)

Describe the simple, baseline model that you will compare your neural network against. This can be a simple model that you build, a hand-coded heuristic model (that does not use machine learning).

- 2/2 A reasonable choice of baseline, accompanied by a description of the baseline so that a knowledgable classmate can find, reproduce, or build a similar version.
- 1/2 An adequate description of a reasonable baseline.
- 0/2 Poor choice of baseline inconsistent with the problem.

Quantitative Results (4 points)

A description of the quantitative measures of your result and why it is appropriate. What measurements can you use to illustrate how your model performs?

- 4/4 Insightful, well-chosen measurements that illustrate how your model performs.
- 3/4 Minor issue with the choice of measurements, or the way the result is presented.
- 2/4 Major issue with the choice of measurements, or misleading presentation of the results.
- 0/4 No result presented.

Qualitative Results (2 points)

Include some sample outputs of your model, to help your readers better understand what your model can do. The qualitative results should also put your quantitative results into context (e.g. Why did your model perform well? Is there a type of input that the model does not do well on?)

- 2/2 Insightful, well-chosen outputs that illustrate how your model performs. It is clear how you determined which outputs to show, and why.
- 1/2 Some issues with the choice of outputs, or the way the result is presented.
- 0/2 No result presented.

Discussion and Learnings (4 points)

Discuss your results. Do you think your model is performing well? Why or why not? What is unusual, surprising, or interesting about your results? What did you learn, and what would you do differently when starting another, similar project?

- 4/4 Insightful interpretation of the results that is specific to your project. Exceeds expectations.
- 3/4 Sound interpretation of the results.
- 2/4 Some issues with the interpretation.
- 0/4 Discussion does not interpret results, only repeats it.

Ethical Framework (4 points)

Professor Irish (in ESC 301) presented a ethical framework (called "reflexive principlism" in which to place your project - the material is he presented is available on the ESC 301 website. You have had more time to contemplate your project, and were given feedback on your initial ideas on the framework in the proposal.

Present your project through the lense of that ethical framework, and be sure to make specify who the various stakeholders could be, and the ones that you are focusing on, and to narrow the scope of the principles to apply, and justify your thoughts.

- 4/4 Thoughtful consideration of the ethical within the context of the given framework. Stakeholders, and principles are clearly identified. Excellent, clear and compelling justification.
- 3/4 Framework and issues are all present, some good ideas; a few missing elements.
- 2/4 Some good ideas, but lacking significant depth of though, and many missing elements of the framewor, and many missing.
- 1/4 Some thought, but missing depth and framework.

Project Difficulty / Quality (4 points)

A measure of how "difficult" the project is, and how well your model performs given the difficulty of your problem. If your problem is more difficult than what one might expect, you should clearly articulate why in the body of your report.

- 4/4 Team creates a model that is that performs better than expected, and/or is more complex than expected. Team demonstrates learning beyond the requirements of (e.g.) the assignments.
- 3/4 Meets the expectations of the difficulty of the project, and the performance looks adequate. A poor model performance is justified.
- 2/4 Project is "too simple", or does not perform as well as expected. There are suggestions identified by your TA that wasn't followed up on.
- 1/4 Below expectations.

There are a variety of ways to increase your project complexity, even after the fact. For example:

- Try different models
- Try averaging predictions for those different models
- Use data augmentation techniques, and discuss results
- Explore how to make your model smaller

Structure, Grammar & Mechanics (8 points)

The document should be easy to understand, be grammatically correct, and well-written.

References should be in the IEEE documentation style, described here: https://ieee-dataport.org/sites/default/files/analysis/27/IEE

- 8/8 Clear, concise and well-written document. Very high quality writing, significantly exceeding expectations.
- 7/8 Well-written document, easy to follow, and above expectations.
- 6/8 Well-written document that has some issues with grammar, mechanics, or structure. Meets expectations.
- 5/8 Reasonably-written document with grammar, mechanics, or structural issues.
- 4/8 Document has many issues.