CSCI 547 - Machine Learning - Final Report Template

Project Title

Subtitle [as applicable]

Name:

Introduction

Provide a description of the problem and the value in finding a solution, motivate your reader as to why they should care about your problem or question. **(recommended: 3-6 paragraphs)**

Related Work

Review and summarize at least three publications from the literature related to the problem you are investigating **(recommended: 1-2 paragraphs)**

Data

Describe the data that you are working with.

- What is the structure of your data? e.g., dimensionality? Is it an image, time-series, tabular, etc.?
- How was the data generated? e.g., is it from sensor? Is it from a survey? Did it come from different devices, or collected on separate locations (e.g., geographic location is often important for satellite imagery).
- What is the source for your data? e.g., please provide webpage links, the organization that created it?

  (recommended: 1-3 paragraphs, and possibly a table summarizing data properties)

Experiments

Present your machine learning experiments (for supervised learning, a description of any preprocessing, feature extraction, classification/regression techniques, experimental designs and evaluation criteria) and why you made each of the choices you did to achieve your goal. Also explain how you partitioned your data into training, validation, etc.

(recommended: 2-5 paragraphs, and possibly a simple flowchart)

Results

Include a complete performance assessment that includes your validation approach (cross validation, train/validate/test split, etc.) and the key metrics of performance for the problem (ROC curves, PR curves, confusion matrices if applicable, etc.). **(you should have tried at least a few different ML methods, or hyperparameter settings of those models, to solve your problem, even if they perform poorly. Results should be presented clearly in a Table (e.g., for regression) or ROC/PR curves for classification, or both)**

Conclusions

Very succinctly recap the problem you were studying and what was your approach to the solution. Focus on explaining the key takeaways from your work - these should not be merely a set of bullet

points, but fleshed out conclusions. As you're writing your conclusions think about if the reader took nothing else away from reading your report, what would you want them to know most? Did you identify one particular approach that worked well? Was there a challenge that you faced that opens the door to working on solving a new problem? What avenues of research would you pursue next?

References

An alphabetical list of references cited in this work. A minimum of 3 are required, corresponding to your literature review. Consider using the Zotero citation manager for collecting and compiling your references. These should primarily be research papers and technical reports.

While the specific citation format is not critical, it should be consistent and follow a known model (MLA, IEEE, Chicago, APA, etc.). Citations SHOULD NOT JUST BE HYPERLINKS. Use appropriate citation formats.

Appendix [optional]

You may have unlimited appendices of supporting materials, although they will not be directly evaluated as part of the report itself.

Other information

Note: this section is for information purposes and should not be included in your report

How to use this template

1. Click File > Make a copy and delete the instructions replacing text with your report content
2. Follow the formatting instructions contained in this document
3. Share your completed version of the file giving general access to “anyone with the link” and at least “commenter” privileges so that we can add comments and suggestions directly to the text

Length requirements

Your report should be no longer than 2,500 words, not including references and roles. You may have an unlimited number of figures and tables, and those do not count towards the word count.

Headers

The main sections of the report should have the “Heading 1” style applied (as “Formatting” is shown here). Subsections, like this one, should have the “Heading 2” style applied and so on. This will allow the report to be

Tables

Tables should have captions before the start of the table, and, like Table 1 below, should be referenced in the text.

Table 1. Experimental conditions investigated in this study. In this case, each experimental condition is listed in each row with the columns discussing the factors that differ across experiments

Experimental Conditions	**Factor 1 (e.g. hyperparameters, model types, training datasets, etc.)**	**Factor 2**	**Factor 3**
Condition 1			
Condition 2			
Condition 3			

Figures

Figures are highly encouraged, and should each be referenced in the text (such that every figure has a clear point to the story that you tell). Every figure should have a caption, figure number, axis labels (with

units if applicable), and legend or direct labeling of data (as shown in Figure 1), if applicable. If you use any figures that are not your own, they should be cited as well. No figure should be superfluous - every figure should be referenced in the text. Figure 1, below, shows an example of a clear figure with a descriptive caption.

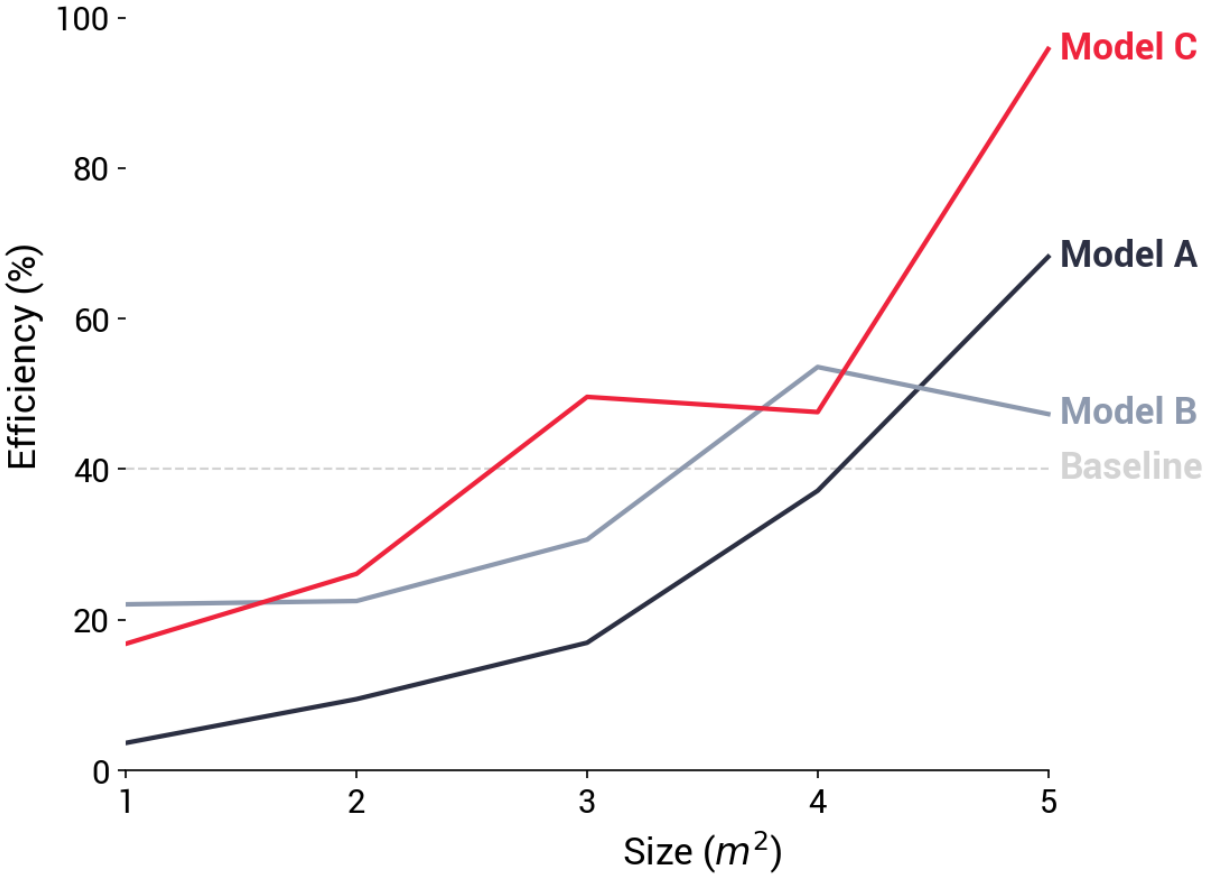

Figure 1. Experimental results from showing that Model C tends to outperform other models compared for the same training dataset.

Flowcharts

Every report should have a flowchart as described above. Some examples of this include:

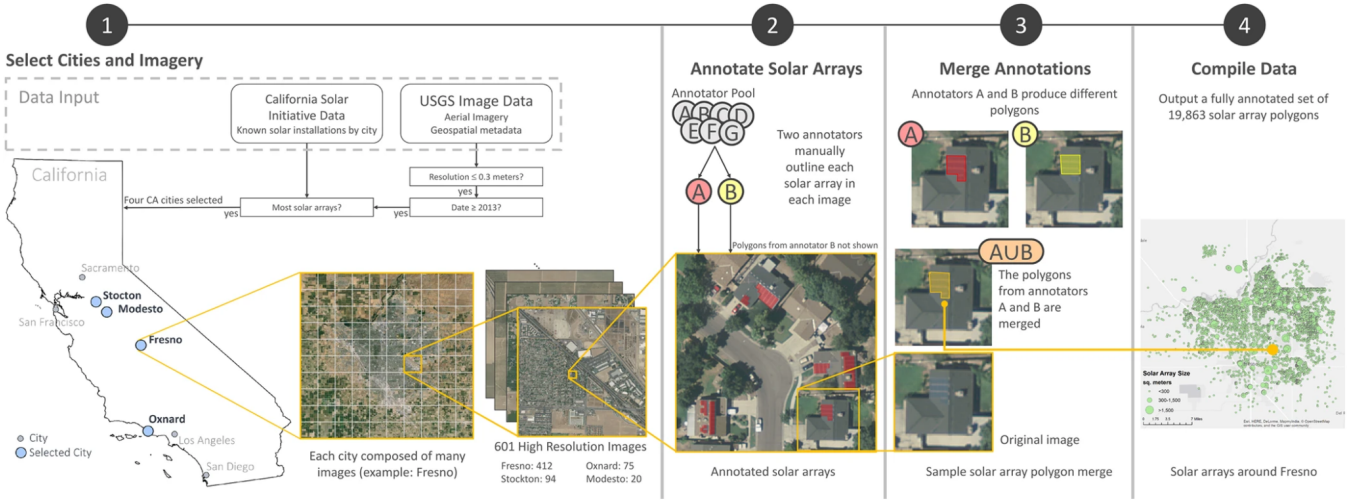

Figure 2. Example flowchart from Bradbury et al. 2016.