Title: Final Report

G000 (sXXXXXXX, sYYYYYYY, sZZZZZZZ)

Abstract

The abstract should be a few sentences (100–200 words) long, providing a concise summary of the contents of your report including the key research question(s) addressed, the methods explored, the data used, and the findings of the experiments.

1. Introduction

This document provides a template for the MLP coursework 4 final report. This template structures the report into sections, which you may use, or you can structure it differently if you wish. If you want to use subsections within a section that is fine. In this template the text in each section will include a very brief outline of what you should include in each section, along with some practical LaTeX examples (for example figures, tables, algorithms). Your document should be no longer than **eight pages**, with an additional page (or more!) allowed for references.

You should give a broad introduction to the project, including citations to related work. Your aim here is to explain why the project is addressing an interesting topic, and how it relates to things that have been done in the area.

You should make clear what are the aims and objectives of the project, what are the research questions being addressed. Are they verifiable by experiments and worth conducting research on? Be precise. In this section you should make clear what the project's contribution is: how is it different to what is already done. If the project objectives have changed since the interim report, please point this out and discuss why it was so.

Use bibtex to organise your references – in this case the references are in the file `example-refs.bib`. Here is a an example reference (**?**).

2. Data set and task

Clearly describe the data set and task you will be exploring. If the data requires any preprocessing, then explain this. The description should be in enough detail such that your work would be reproducible by another group. Describe how you will evaluate the task (for example, classification accuracy). Use citations where appropriate.

3. Methodology

Explain clearly the technical methodology, the models and algorithms that are used. Approaches that were covered in the lectures can be described briefly, but if you are using modifications to such approaches make sure these are clearly described and self-contained. Again use citations to the literature.

If you present algorithms, you can use the `algorithm` and `algorithmic` environments to format pseudocode (for instance, Algorithm 1). These require the corresponding style files, `algorithm.sty` and `algorithmic.sty` which are supplied with this package.

Algorithm 1 Bubble Sort

Input: data x_i, size m
repeat
  Initialize $noChange = true$.
  for $i = 1$ **to** $m - 1$ **do**
    if $x_i > x_{i+1}$ **then**
      Swap x_i and x_{i+1}
      $noChange = false$
    end if
  end for
until *noChange* is *true*

4. Experiments

This section should cover the experiments carried out, including, for each experiment, the:

- Motivation – what did you aim to learn from the experiment?
- Baselines – do you compare your method to appropriate baselines (e.g. the existing method that you built on your method)?
- Description – describe carefully how you carried out the experiment, mentioning and justifying the hyperparameter settings. As always, your aim is to give enough information so that someone else (e.g. another MLP group) could reproduce the experiment precisely.
- Results – present the results clearly and concisely. Usually a result is in comparison to a result from another approach (e.g. a baseline experiment, the previous experiment, results from the literature, ...). Please make sure that these comparisons are clearly presented.
- Interpretation and discussion – what do your results indicate? how do they relate to the motivation for the experiment? are there further useful analyses or visualisations of the results that you can carry out?

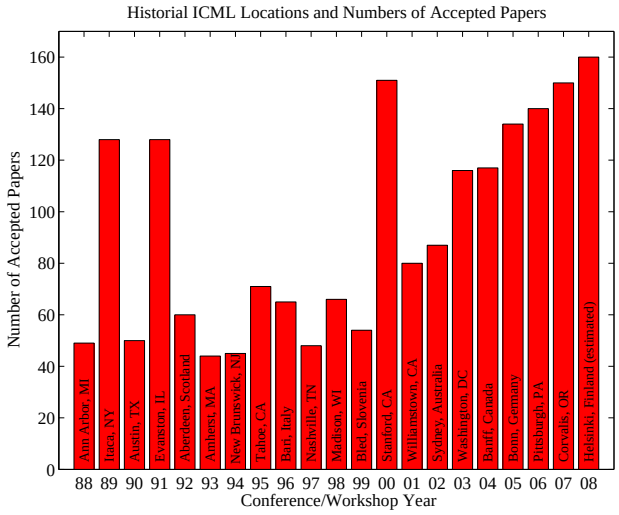

Figure 1. Historical locations and number of accepted papers for International Machine Learning Conferences (ICML 1993 – ICML 2008) and International Workshops on Machine Learning (ML 1988 – ML 1992). At the time this figure was produced, the number of accepted papers for ICML 2008 was unknown and instead estimated.

Please note that negative results are not necessarily a bad thing – learning is always good! But negative or positive, please try to analyse your results as well as you can.

There is no need to include code or specific details about the compute environment.

As before, your experimental sections should include graphs (for instance, figure 1) and/or tables (for instance, table 1)[1], using the `figure` and `table` environments, in which you use `\includegraphics` to include an image (pdf, png, or jpg formats). Please export graphs as vector graphics rather than raster files as this will make sure all detail in the plot is visible. Matplotlib supports saving high quality figures in a wide range of common image formats using the `savefig` function. **You should use `savefig` rather than copying the screen-resolution raster images outputted in the notebook.** An example of using `savefig` to save a figure as a PDF file (which can be included as graphics in a LaTeXdocument is given in the coursework document.

If you need a figure or table to stretch across two columns use the `figure*` or `table*` environment instead of the `figure` or `table` environment. Use the `subfigure` environment if you want to include multiple graphics in a single figure.

5. Related work

This section should review published work which can help to give a better understanding of your work – related approaches, other work on the same data, ideas for future work. The aim is to try to place what you have done in a wider context.

[1]These examples were taken from the ICML template paper.

Data set	Naive	Flexible	Better?
Breast	95.9± 0.2	96.7± 0.2	√
Cleveland	83.3± 0.6	80.0± 0.6	×
Glass2	61.9± 1.4	83.8± 0.7	√
Credit	74.8± 0.5	78.3± 0.6	
Horse	73.3± 0.9	69.7± 1.0	×
Meta	67.1± 0.6	76.5± 0.5	√
Pima	75.1± 0.6	73.9± 0.5	
Vehicle	44.9± 0.6	61.5± 0.4	√

Table 1. Classification accuracies for naive Bayes and flexible Bayes on various data sets.

6. Conclusions

The conclusions section should concisely summarise what you have learned from the experiments you carried out, and relate the final outcome of the project to the overall research questions and objectives. If there were potentially interesting future directions in your project that you could not explore due to lack of time and/or space, mention them briefly.