Final Report Template and Guideline:

This template contains the most important sections that are required to be included in the final report. This template is very similar in terms of structure to most conference and journal papers. Thus, if your project leads to sound results, you already have a draft that is similar to what you will submit to either a conference or journal paper. However, this template is not a rubric and completing all sections will not guarantee you a certain grade.

Formatting: Final reports should be formatted for US letter (not A4) size paper. The text must be formatted in a two-column layout, with columns no more than 9.5 inch tall and 3.5 inch wide. The text must be in Times font, 10 point or larger, with 11-point or larger line spacing. Students are required to use the IEEEtran.cls version 1.8b LaTeX template for this course that will be shared later. **Final report is a compressed folder which contains the PDF file of the report and all LaTeX and template files.**

Below, you can find the essential sections that are required to be included in the final report:

1. Abstract [≈ 1 to 2 paragraphs]

The abstract should consist of at most 2 paragraphs and must discuss: a) the project's motivation, i.e. why the problem and the proposed solution are important, b) the proposed approach from a high-level point of view, and c) the most important results and findings.

2. Introduction [≈ 0.5 page]

Introduction is commonly an extended version of the abstract. Therefore, these topics should be discussed in the introduction: a) the problem that is intended to be solved in this project and motivating the problem by elaborating on its importance, b) the proposed approach in an explicit way, i.e. what are the exact inputs and outputs to the proposed solution and how they are processed, c) a summary of experimental results which is more fine-grained than abstract.

3. Related Work [≈ 0.5 page]

In this section, similar approaches that have been proposed for the same problem in the project should be discussed. In particular, the advantages and disadvantages of these approaches should be summarized in this section. It is required to have **at least 5 related works and references in this section that have been published in top venues**. Google Scholar is the best search engine to find similar works.

4. Dataset and Features [≈ 0.5 page]

If you have used any datasets to evaluate your approach, all relevant details should be discussed here. In particular, you should discuss these: Where have you downloaded your dataset from (include a citation)? Have the raw data been post-processed (e.g., image resizing, edge smoothing, noise removal, etc.)? How many training/validation/testing instances did you have? How many features did you have for each instance? What features did you have for each instance?

5. Approach [≈ 1 to 1.5 pages]

This section should present your approach in detail. In particular, you are required to explain the machine learning algorithm that has been applied to the chosen problem. Note that although the teaching staff may know this algorithm, other readers may not. Thus, please, give a short description of how the applied algorithm works. If the algorithm has not been discussed or presented in the class, you may need to explain it more precisely in more than 1 paragraph. Also, it is strongly recommended to include a figure that shows the overall architecture of your solution.

6. Experiments and Results [≈ 1 to 3 pages]

All experimental settings and results are discussed in this section. You should first provide details about how the machine learning algorithms are tuned, i.e. what hyper-parameters you chose and why/how did you select them? For example, did you leverage cross-validation? If so, how many folds did you use? Then, you should present and discuss the experimental results accurately. Particularly, you should explain what metrics have you relied on to measure the performance of your approach (e.g., accuracy, precision, AUC, etc.)? As an example, if your approach has been applied to a classification task, you should include a confusion matrix and/or AUC curve. Also, you should discuss about false positive and false negative rates and provide insight about why your proposed solution mistakenly identify one instance to be part of another class. In addition, you may discuss whether your approach has overfit your training dataset and what have you done to mitigate that.

7. Conclusion and Future Work [≈ 1 to 2 paragraphs]

You should summarize your entire report in this section by reiterating key points. Also, you should explicitly and briefly explain how the current work could be improved in future research projects if you are provided with more manpower and computational resources.

8. Appendices [No page limit]

Include any results, tables, figures or plots that could not fit in the report due to page limitation.

9. Contributions

The contribution is an important section in the final report. Specifically, this section describes what each team member worked on and contributed to the project. The grading policy will be further explained in a separate file and will be shared with students.

10. References [No page limit]

Citations to any papers, URLs, blogs and tools that have been used in the project.