CMPS 3240: Intro to Machine Learning

Project descriptions

1. **Team:** Form a team of 1-2 members. The recommend number is **one**. A group of two members are expected to present twice as much results as a group of one in terms of depth and/or breadth.

2. **Topic**

    a. It has to be a machine learning topic. Can be either an applied topic or a theoretical one.

    b. It is recommended that you choose a topic closely related to your past or current course projects or research projects. If you don't have one, you can join others who already have project ideas.

    c. In the case above, you have to describe clearly how this project is different from your other past or current project, and attach that other past/current report in the final report.

3. **Originality (important!!):** You are encouraged to search the web for ideas. You can use other peoples' data, codes, reports, tutorials, etc., AS LONG AS YOU CITE THEM PROPERLY. Failure to cite them is considered a plagiarism. In the final report you have to clarify what is new in your project that has not been reported by you or others previously.

4. **Experiments**: When you report performance of your model or approach, you need a comparison with simple baseline approaches, or better yet, what others have done on similar tasks. You have report training, validation, and test performances. Also try to perform multiple experiments for completeness, for example, using similar but different datasets, preprocessing methods, neural net architectures, hyperparameters, etc.

Schedule:

1. Team up by **9/22**. Log in on Canvas and sign up for teams under /People/Project.

2. Initial presentation (**10/4**)

    a. Submit by **10/4** before class a short (~5 slides) presentation on Canvas.

    b. All team members will take turns to present results for 10-15 minutes per team. Teams

will present in the order of team number.

Initial presentation

Within the given presentation time, you should clearly convey the following information:

1. The problem that you are trying to solve; Why it is an important or interesting problem

2. What challenges there are to solve the problem

3. **What others have done already to solve the problem**

4. Your plan of attack. Consider both plan A and plan B.

5. Role of each member

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3. Mid-term presentation (**11/15**)

   a. Submit by **11/15** before class a medium length (~10 slides) presentation on Canvas.

   b. All team members will take turns to present results for 10-15 mins per team. Teams will present in the order of team number.

Mid-term presentation

Basically the same format and length as initial presentation

Quickly review the same information as in initial presentation. However, instead of your plan of attack, present the actual progress briefly since your initial presentation.

It will be graded based on the completeness of all those information and the progress.

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4. Final presentation (**12/8**)

   a. Submit by **12/8** before class a full length (~15 slides) presentation on Canvas.

   b. All team members will take turns to present results for 10-15 mins per team. Teams will present in the order of team number.

> **Final presentation**
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> In additional to the information in the initial presentation, add the following sections
>
> Methods, Experiments, Results, Discussion, Conclusion

5. Final report (**12/14**)

    a. Format: see below

Final report format

The report should be a pdf file of 4-8 pages, single column, letter size, 11 point, times new roman.

The report should contain the following components.

1. Title:

2. Authors:

3. Abstract: 200 - 500 words

4. Intro: Describe the problem you are solving, methods you are using, any hypothesis, what is new about your approach, and brief summary of the results of your experiments.

5. Background: Include any preceding work that is related to your work. Describe how they are related to this report.

6. Methods: Clearly describe any probabilistic models, algorithms, or theories that you are using in the report. Use appropriate citations.

7. Experiments: Describe original data, data preprocessing (if any), experiment conditions, results, and your interpretations of the results.

8. Discussion: Discuss anything you think is important about your methods or results, such as how to improve the current results.

9. Conclusion.

10. References: List of all papers, books, etc. cited in the report, between 5 – 20.

6. Evaluation criteria for all presentations: clarity (33%), originality (33%), completeness (33%)