PROJECT DELIVERABLE 3

Due: March 13th, 2019

Over the course of MAIS202, you will be completing a machine learning based project from a dataset of your choice for the final project. At the end, you will have the option to either:

1. *Demo your project by integration it in a webapp (or something more advanced) or*
2. *Present your work as a academic project through a poster.*

McGill AI Society will be hosting a science fair where you will be showcasing your work! It will be awesome!
For both cases, you will end the project by writing a blog post about it,

Submission

This is an individual deliverable. All deliverables should be electronically submitted on Github and completed with the same academic integrity and standards expected at McGill University. Include appropriate citations.

Submit both your *well-documented* code and report.

Deliverable Description

In this deliverable, you will discuss your final training results and your integration approach. This is a machine learning course, so make sure to focus on the analysis of your results.

1. **Final Training Results**

Compare your final results to your preliminary ones (from the previous deliverable). Have you changed anything to your model since the previous deliverable? If so, how have your changes improved the results?

Now, focus on your final results. Once again, present a detailed analysis of your results, provide graphs as appropriate. Analysis requirements defer in every field, but reporting the following is mandatory for everyone:

- Confusion matrix, accuracy and precision.
- Evaluation of performance and interpretation
- Include a comparison of the most important hyper-parameters in your model, and how they have affected the results. Also be sure to talk about the loss function which you are trying to minimize.
- Whether you accomplished your initial goal. If no, why not?
- Suggestion of areas of future work.

2. Final demonstration proposal

Now that you trained your model, it is time for you to integrate it in a final product. *Don't forget to save your trained weights! You will need them for the integration and/or testing your model.*
Eg in keras: `model.save_weights(filepath)` *and* `model.load_weights(filepath)`

- *Application*

We want all of you to at least have a landing page type website to demo your model and results. For more experienced developers, you are welcome to choose something more advanced.

Discuss your final product, and final integration approach. Describe and justify the choice of stacks and technologies. Provide diagrams as appropriate. Explain your experiences with the technologies you have proposed. If you do not have any, explain how you would come about to learn them (eg. online tutorials, etc.)

Do not worry if you do not have any experience is webdev or other type of software development. Discuss with your project leaders, or any other execs, and we will help you out!

- *Poster Presentation*

Your poster must follow the standard scientific method approach. Start with your problem and hypothesis and conclude with concrete results. In the ML industry, we are particularly interested to know how your model performs compared to baseline implementations, so be sure to put a high focus on that in your poster. Talk about which part of your implementation helped you reach your goal and any paper or previous work you referred to. Most machine learning research are intended to be applied in real world products. In which areas do you think your model may come into use, and how do you think it can be applied?

For this part, please outline the key ideas you plan to convey in your poster. Be sure to include points from each part of your scientific method approach.

Note: Please keep in mind that this will be final deliverable before your demo at the science fair. Therefore, be as thorough as you can so that we can give you feedback! Good luck!