**Midpoint report**

**CS 510 – Explorations in data science**

**Paper topic**

With the ever-expanding use of machine learning models, concerns such as ethical and legal issues are vastly discussed in many places. But should we be apprehensive about the power consumption of the ML and pollution that it makes? Is the electricity used for the devices involved in the ML model training, considerable? What is the share of ML in global carbon emission?

All these questions were referred to in my research presentation. Now it is time to verify if the numbers add up. The topic of final project’s paper will be whether ML has a huge impact on our environment or not.

**Research planned**

I have read the articles supporting that “the carbon impact of AI” is considerable and extracted the numbers from it. Now it is time to go to the references this paper is using to fact check the statistics. I will also try to find some other statistics as I failed to do so last time. The reason was most of the benchmarks are not talking about the training duration. The statistics from the original paper could not be found, mostly. Afterward, I will research the carbon impact of other industries that are impacting our planet at the moment. Comparing the result of these two allows me to conclude whether the pollution made by AI is worrisome or not?

I would not create any ML code to measure the time and power consumption of it. Because running a model training on my personal devices would take more than 6 months to finish the job. Instead, the report from other article about the power usage will be used. Subsequently, those numbers will be applied to have a rough estimation of how much energy will be consumed to train a sophisticated ML model.

**Team structure**

This team consists of only one person which would be Damon Aliomrany. Therefore, all the tasks will be done by me.

**Progress made in regards of milestones**

1. Research on the supporting articles. (Done)
2. Collect data from existing codes to estimate the power consumption and pollution of ML models. (This part holds me back as there are few reports on the duration of ML model training. I asked for help from Professor Anthony Rhodes at the moment.)
3. Prepare a paper about the result of this research on how bad is the carbon impact of AI.
4. Research on other industries and compare the pollution they make to the AI field’s pollution. (This will be most of my paper)
5. Reveal the final observation in the final paper and presentation.

I had a meeting with professor Kristin Tufte on Tuesday 21st of July 2020 talking about the difficulties I have encountered. She gave me some solution and a path to follow.