**Ciarra Coston - Week of 06/06-10/2022**

**1. At least 2 of the 3 subsections should have material**

**1.1 Papers Read**

The Photometric LSST Astronomical Time-series Classification Challenge (PLAsTiCC): Data set

This article explores how PLAsTiCC aims to tackle the categorization of massives amounts of light curves collected. The main question is “how well can we classify objects in the sky that vary in brightness from simulated LSST time-series data, with all its challenges of non-representativity?” The article continues to explain more background of how and what data will be collected. There are two types of survey methods. The first is a Deep Drilling Field (DDF) which covers small areas of the sky thus this method hopes to capture the flux of fainter objects. The second survey method, Wide-Fast-Deep (WFD), aims to do the opposite and collect data from much larger portions of the sky thus capturing and discovering more objects. This data will be represented in six different ranges of wavelength. Finally, the challenge asked participants to use a training set, that included light curves and metadata of an object, to make a system that is capable of classifying similar objects with a much larger test set.

Results of the Photometric LSST Astronomical Time-series Classification Challenge

(PLAsTiCC)

This article focused more on the solutions and winners of PLAsTiCC. Kyle Boone, the only astronomer of the top three and an undergraduate at the University of California Berkely, won first place with his project named, avocado. His project used Gaussian process (GP) light curve fighting, data augmentation, and gradient boast classification. The second-place winners, Mike and Silogram, created Recurrent Neural Network classifiers and Light Gradient Boosting Machines. Finally, third place went to the team, Major Tom. They created a 1D Convolutional Neural Network. The article continues to compare the top-ranking participants. Many faced similar challenges which often dealt with limiting amounts of data of specific objects and classifying objects with similar light curves. However, the winners were able to show that there are many approaches of machine learning methods (and combinations of methods) to effectively approach these problems.

**1.2 Code Written**

N/A

**1.3 Other (algorithm, discussion with experts, went to a conference)**

N/A

**2. Figures (at least 1 figure)**

N/A

**3 Results (required)**

This week I explored the Photometric LSST Astronomical Time-series Classification Challenge (PLAsTiCC) to better understand the project, the methods used to solve the challenge, and how these projects will affect the future applications of the Rubin Observatory LSST. By learning the background and the methods of winners I am better prepared to study and understand the code created for the project.

**4 Planning (required)**

For next week, I intend to work through the Google collab notebook, MLPNS2021 exam, to study the components and code of the time series and their manipulation.