Donald Miner
CS360

Stellar Object Observation

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https://donaldminer.github.io/Final.html

Background and Motivation

Astronomy has been a large interest of mine for a long time and I really enjoyed my previous experience studying Astronomy. I would spend lots of time exploring different softwares that allowed you to search the universe and display all sorts of interesting (to me) data on all of the different celestial bodies that exist within it. I want to be able to provide visualizations to get people interested in the field as others have done for me.

Project Objectives

1. Show the redshift values of Quasars and Galaxies.
2. Show the light values that each of the classifications emit through different filters.(Infrared, Near Infrared, Red, Green, Ultraviolet)
3. Show the locations of each stellar class in the sky and how they are grouped.

Data

I am getting my data set from :
https://www.kaggle.com/fedesoriano/stellar-classification-dataset-sdss17

Data Processing

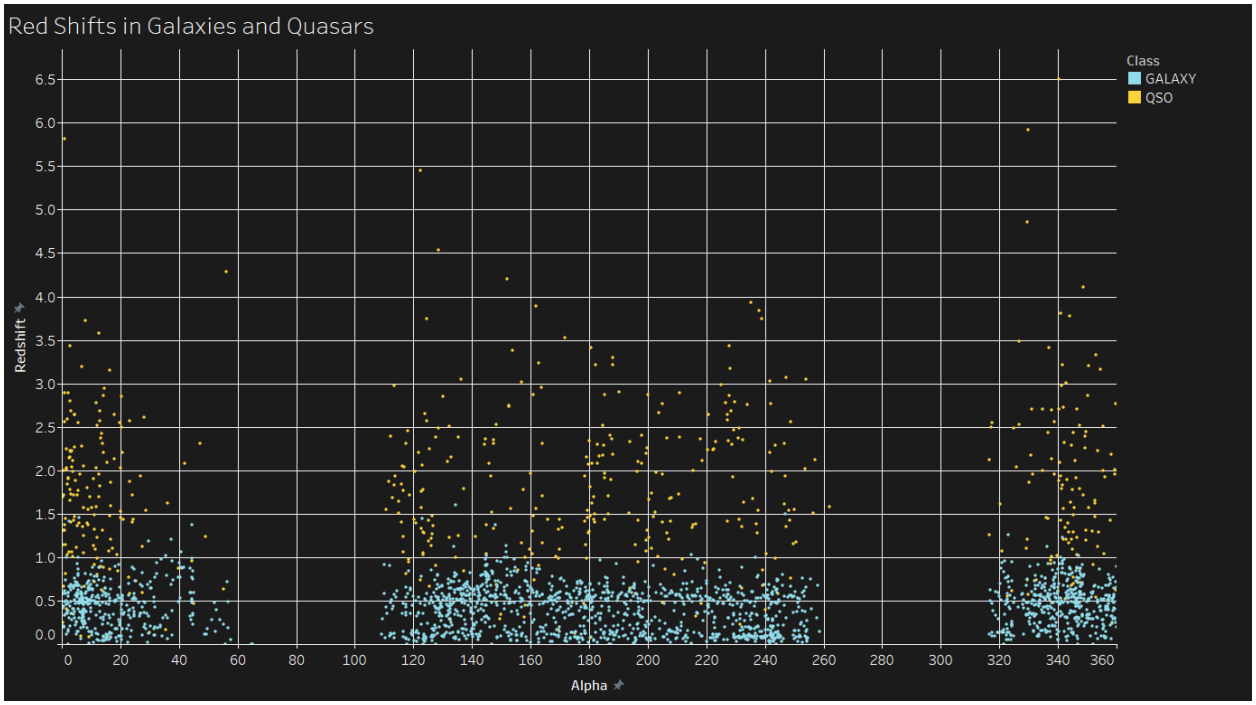
I don't expect substantial data cleanup, possibly writing a small amount of code for grouping each of the stellar classes within the javascript file as well as translating right ascension and descension into plottable coordinates.

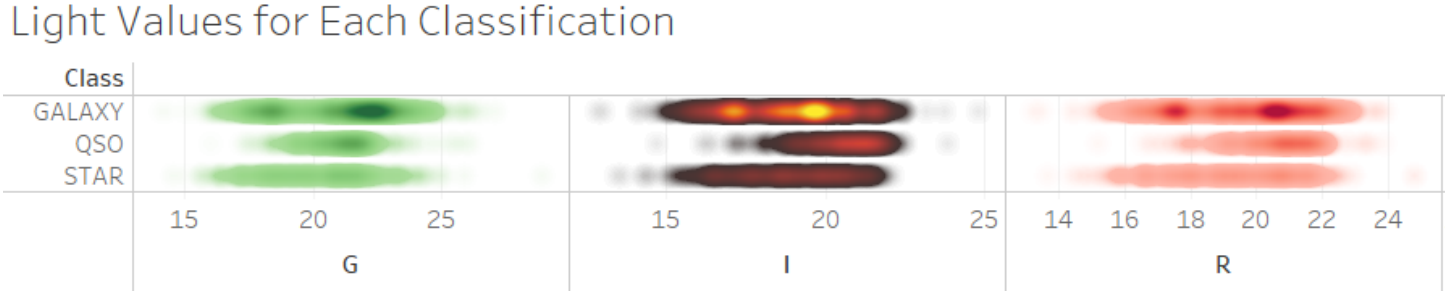
Must Have Features

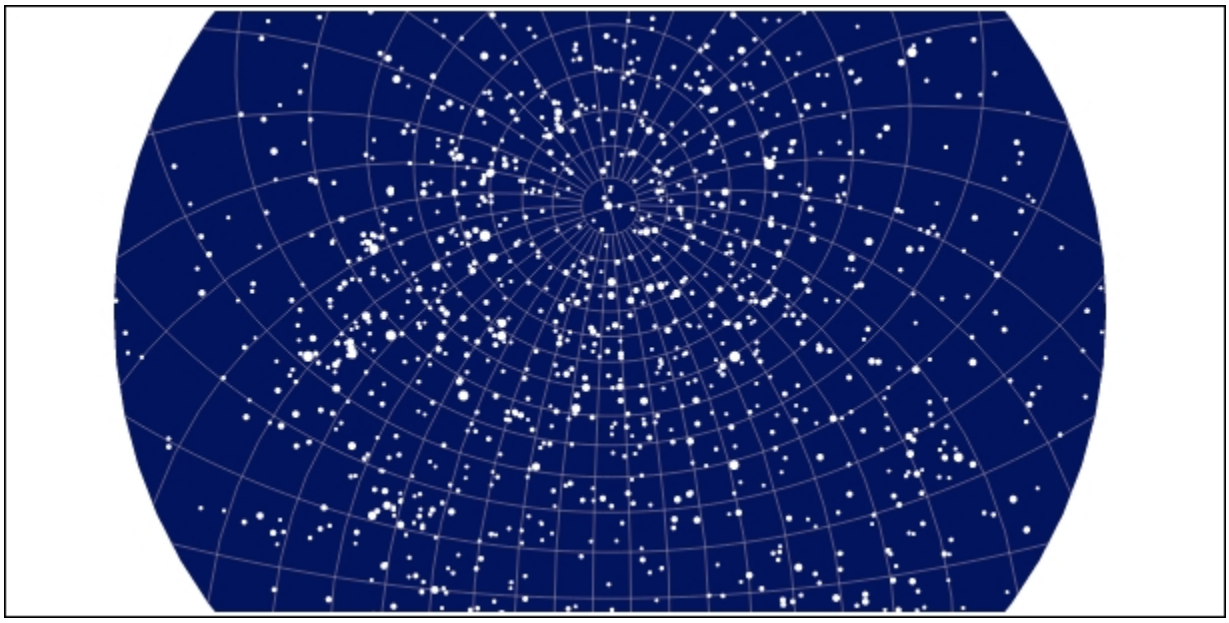
1. Create a scatter plot to display Redshifting of Quasars and Galaxies in reference to the Right Ascension Angle it was observed.[PO1]
    a. Must allow for highlighting each class individually as well as together.
2. Create a Density Plot matrix displaying the measurements each classification emits through every filter. [PO2]
3. Create an interactive sky map displaying star, quasar, and galaxy positions. [PO3]
    a. Must allow for users to drag the view around the sky to see the full range of data
    b. Must be able to highlight each specific class.

Optional Features

1. Plotting the Scatter Plot on a Polar axis would be a nice visual as the data is being input from viewing angles and not a 2D map.
2. Allow for different grouping in the density map, i.e. by class or by filter.
3. Toggling a density map on the skymap for each class to give a clearer view of data.







Project Schedule

- March 23
    - Project Proposal
    - Website
    - Github Page
- March 30
    - Data Processing for each of the visualizations
    - Create a basic version of the final site with smooth scrolling between visualizations
    - Finish must have features for the scatter plot

- April 6
    - Alpha Release
    - Finish must have features for the density plot
    - Have 3 static visualizations completed
- April 13
    - Finish static visualization of interactive star map
    - Add highlighting for the scatter plot
    - Add each visualization to final site template
- April 20
    - Convert scatter plot from x y coords to polar coords
    - Convert static sky map from x y coords to polar coords
    - Add dragging feature to sky map
- April 27
    - Add option for density plot grouping
    - Add toggling density plot for sky map
- May 4
    - Make toggling data highlights/data grouping have smooth transitions
- May 1
    - Make sure site scrolls smoothly with added transitions and final visualizations

References

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