Python Final Project Report

Our goal was to graph the ESI, Earth Similarity Index, versus the distance of the exoplanet from the home star. This relationship will show us how habitable the exoplanets will be! The planet's radius, temperature, density, escape velocity, and other factors affect an exoplanet's ESI. Although not a perfect measure of a planet's habitability, it is a good indicator of the potentially habitable planet.

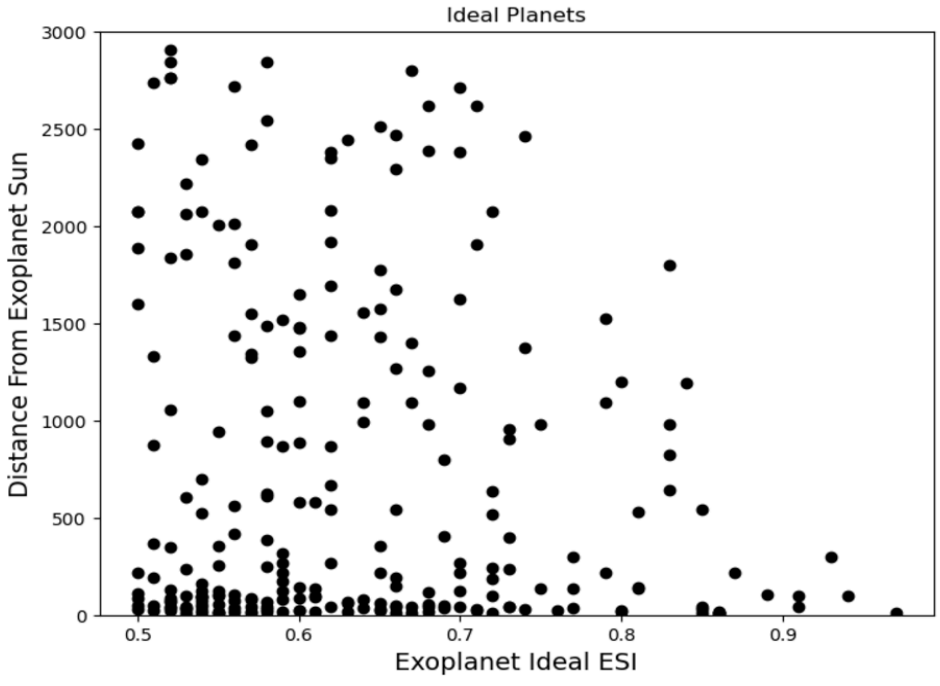
Chosen Phenomena and Data Source:

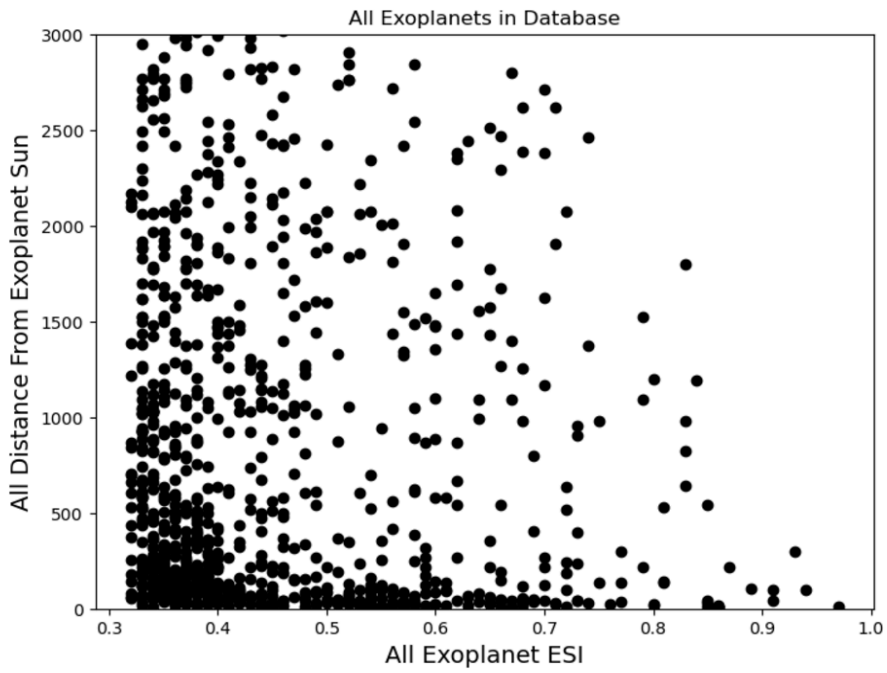
The chosen phenomenon for this project is the habitability of planets. To study this, we used a datasource from the Planetary Habitability Laboratory at the University of Puerto Rico at Arecibo. This informs us about the exoplanets' distance from their home planets and ESI. [https://phl.upr.edu/hwc/data]

Procedure:

To ensure reliability of the test, first we're going to filter the data to only include planets with an ESI greater than 0.5. This generally indicates a potentially habitable planet. We'll also be filtering the data for any exoplanet with an ESI greater than 1, this indicates researching error. We then Labed and restricted the axis to our desired range, and made the graph into a dot plot to visualize the individual planets. We then repeated this for all exoplanets for an additional point of reference.

Our Data:





On the left side is our data for the esi greater than 0.5, the right side is all of the exoplanets, obviously there's less of the ideal planets on the left, as shown in the data, and there closer to they're sun

Conclusions of the Project:

1. Planets with a high ESI tend to be close to their home sun. This is indicated by the most dots close to the x-axis in the ideal exoplanets model.
2. However, planets cannot be too close to the sun or their ESI will also decrease. This is indicated by the significant decrease in the number of dots close to the x-axis.