User's Manual

P.I.E

User Guide

Release No.	Date	Revision Description
Rev. 1	12/03/2021	User's Manual

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Introduction:

The goal of this project is to create a program that can classify various types of stars in our galaxy. In this program a user will input a CSV file, when the file is input, a machine learning algorithm will attempt to classify stars and display an outcome. This outcome will then be pushed into a graph generator to display the results.

System Operation:

How to use the machine learning algorithm:

When a user enters the program, they will be greeted by a UI.

This UI will have 4 simple features: help, an option to insert the CSV file with a name into the machine learning algorithm, and an option to generate graphs based on a CSV file created from the machine learning algorithm.

1. As a new user the first step would be to either consult the help feature to understand more about how the program works or insert your CSV file with a name to the machine learning algorithm. Press **[_number_]** and then input the name of the CSV file. It must be in the same directory as the other files.
    i. The CSV file needs to have the following headers: Temperature, luminosity (L), relative radius (R), absolute magnitude (A_M), Color, Spectral_Class, Type.
2. Once the file has been accepted, it will take a few minutes to process through the machine learning algorithm and output a CSV file, Star_data_with_predictions.csv, in the directory of the program. This will be the name of the file created every time, so if you need to store it, you will need to copy it to another location.
3. If there is no interest in the user to create a graph, they may exit at this time.

Graph Generator

Otherwise, proceed to "How to use the graph generator"

How to use the graph generator:

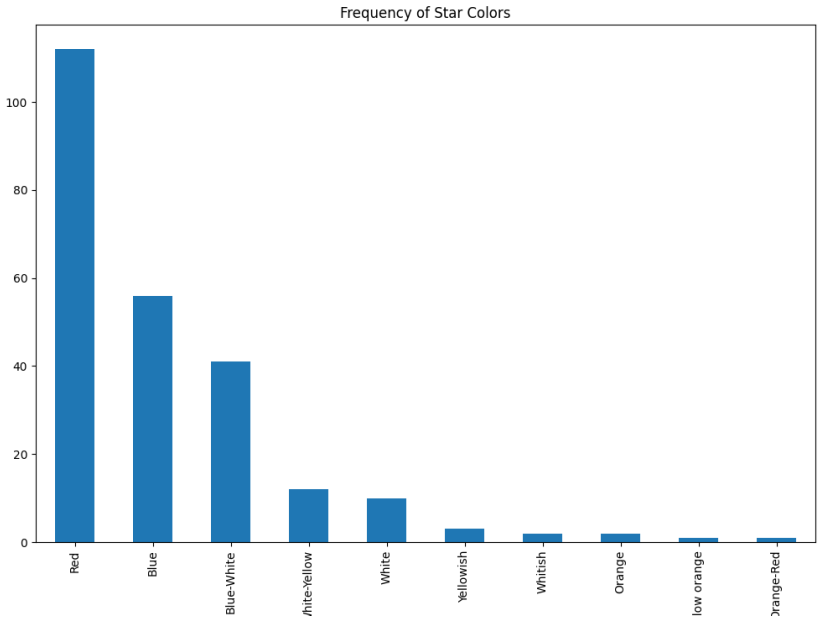
1. At the menu, press **[_number_].** The CSV file used here must be created from the machine learning algorithm.

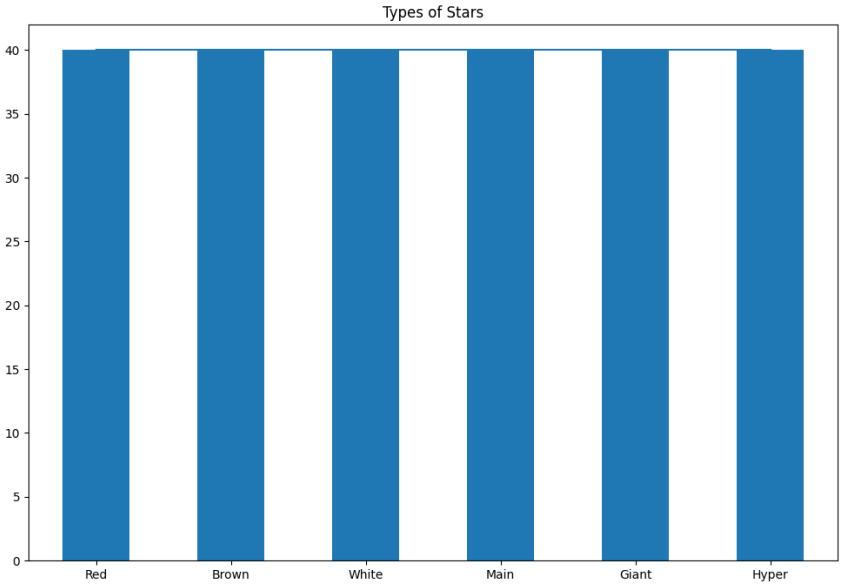
2. After a few seconds it will output graphs to the same directory as the other files for this program. The user may then view them there.
3. Once this has been completed you may exit at this time.

Appendix

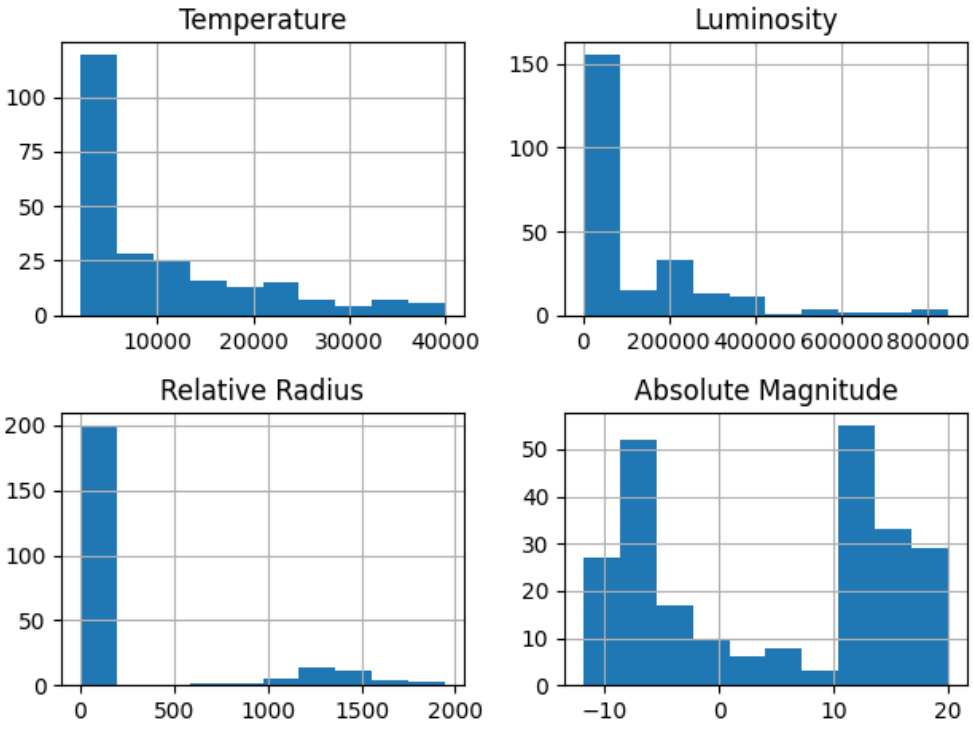
This section describes and depicts additional information about the system.

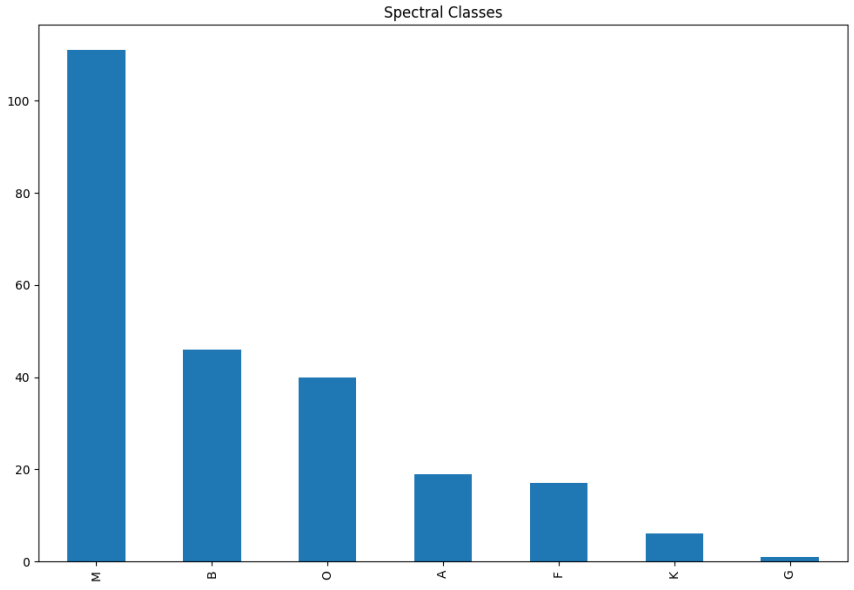
Below are the star patterns that are present in the




Types of Stars
40
35
30
25
20
15
10
5
0
Red
Brown
White
Main
Giant
Hyper


L vs. Temperature
R vs. Temperature
A_M vs. Temperature
Spectral_Class vs. Temperature
Type vs. Temperature
Class vs. Temperature
R vs. L
A_M vs. L
Spectral_Class vs. L
Type vs. L
Class vs. L
A_M vs. R
Spectral_Class vs. R
Type vs. R
Class vs. R
Spectral_Class vs. A_M
Type vs. A_M
Class vs. A_M





https://www.kaggle.com/brsdincer/star-type-classification

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