Homework 5R - Object Classification Redo

HW5R

In order to earn 70% of the points you lost for accuracy on HW5, you may complete the following tasks. This is due at 11:59PM on Monday, April 22 (the last day of class). Since it is relevant for HW6 and for most poeple it implies only adjustments to your colode code plus writing new code to calculate your grade, I would recommend doing it sooner.

In the `/astro/astr8080/` directory is a file `qsos-ra138-dec46-rad3.fits` that contains the coordinates of spectroscopically confirmed quasars. There you will also find the file `wise-stargal-sweeps-ra138-dec46-rad3.fits` which contains the data from the wise-stargal-primary sweeps for the same are of the sky (i.e. with a 3° radius centered on $\alpha = 138°$ and $\delta = 46°$). These are the files that I used to grade your color cut code.

In order to earn back your points, do the following:

1. Run your HW5 code on the file `wise-stargal-sweeps-ra138-dec46-rad3.fits`. Use the `qsos-ra138-dec46-rad3.fits` file as the source of true quasars and calculate your accuracy score according to the scheme below. Note that to obtain a rec array, you simply need to `hdu = fits.open()` the wise-stargal-sweeps file and then do `objs=hdu[1].data`.

2. Adjust your color cuts so that you obtain an accuracy grade of at least 25. If your feedback indicated that the structure of your code was correct, this will just be a matter of adjusting the cuts you use. It is possible to do this by eye, but you need to have the goal of efficiently choosing quasars rather than returning most of the quasars you put in. Thus, you will need to figure out which cuts include parts of color space that are densely populated with stars and have a relatively less dense population of quasars.

3. Email me to tell me where I can find a README file that describes the code that accomplishes the above two tasks, and identifies what you had to adjust in your color cuts to obtain a score of 25 or greater.

HW5 was assessed objectively, except for commenting which was assessed in the usual way. The accuracy benchamark for HW5 was described as follows:

- Accuracy: I will apply your algorithm to a region of the sky I know of that has a high density of confirmed quasars, and I will determine your score out of 30 points using the following formula:

$$q = \text{the total number of confirmed quasars you recover in this region per deg}^2$$

$$t = \text{the total number of objects you target in this region per deg}^2$$

$$f = \frac{q}{t}$$

$$\text{IF } f > 0.85 \text{ THEN SET } f = 0.85 \text{ ... IF } q > 10 \text{ THEN SET } q = 10$$

$$\text{Score} = 30 \times \frac{f}{0.85} \times \frac{q}{10}$$