

Activity -09

November 8, 2022

0.1 Activity 09

The file `Galaxy_Sample_Logistic.csv` in the repository includes the following columns for a large sample of galaxies:

Morph : morphological classification (1= elliptical, 0= everything else)

Density : Log of the environmental density (proportional to the surface density of galaxies around each object)

Absolute : the r band absolute magnitude of an object (remember magnitudes are defined as $-2.5\log \text{Luminosity}$)

Using the programming language of your choice:

Visualize and explore the data, discuss if the correlations you see make sense, given what you have learned in class. Using the best practice for Bayesian analysis, model the probability θ of a galaxy being an elliptical as a function of its environmental density and absolute magnitude.

Compute the 95% credibility interval on θ , in the case of low and high density environments, and for bright and faint galaxies. [You will have to decide what high/low, faint/bright mean here. Make sure you are quantitative and motivate your choice].

Discuss which variable dominates in determining whether or not a galaxy has an elliptical morphology.

[]: