PIC 16, Winter 2018 – Preparation 6F

Assigned 2/12/2018. To be completed by class 2/16/2018.

Intended Learning Outcomes

By the end of this preparatory assignment, students should be able to:

- generate and manipulate arrays with NumPy, and
- create basic plots with `matplotlib`.

Tasks

- ☐ Read SciPy lecture notes 1.1.1 – 1.1.2. While it's written for new Python users, it's a good introduction to Track A because it explains why Python is a good language for mathematical computing. You might also find 1.1.4.3 useful.
- ☐ Follow SciPy lecture notes 1.3.1 The NumPy Array Object and 1.3.2 Numerical Operation on Arrays, doing all the exercises as you go. Become a NumPy ninja.
- ☐ *That's all you need for the quiz.* But to prepare for the assignment, learn about how images are represented on computers.
- ☐ You are probably already familiar with the notion of the RGB color space, but you may not have considered that there are other useful ways of parameterizing color on computers. The HSV color space is actually more intuitive.
- ☐ We'll go over this in class, but for the exceptionally motivated…
  When you load an image file using matplotlib, you get a three-dimensional NumPy array that stores the red, green, and blue components of each pixel of the two-dimensional image. You can manipulate the image by performing array operations with NumPy. This Jupyter notebook demonstrates.