

ECE113: DIGITAL SIGNAL PROCESSING

Spring 2021

LAB 0: BASIC SCIENTIFIC PYTHON AND DTFT

DUE: FRIDAY APRIL 23RD 2021

The aims of this lab are

- Install a working scientific python environment on your computer
- Basic experience with numpy and image plotting within python notebook
- Look the properties of the DTFT and of some window functions.

For the labs in the class we will use the scientific libraries numpy and scipy of python as a digital signal processing environment. These are very powerful tools and have increasing popularity among the scientific community, and most importantly are freely available to all. We will be heavily using iPython, which is a powerful interactive shell for python. We will also heavily use iPython notebook which is a web-based interactive computational environment extension of iPython. In iPython notebooks you can combine code execution, text, mathematics, plots and rich media into a single document. We will provide you with notebooks that will have instructions as well as empty/half empty code boxes for you to do your work in. You will submit the notebook as the report for the lab. To help you ease your way to scientific python, you can find all sorts of resources online. Among them, you can review the page they had created for UC Berkeley EE123 [here](#). Remember that our Python labs for ECE113 are based on the projects used in EE123, under the permission by Prof. Michael Lustig.

1. To do this assignment, you will need to install ipython notebook. You can use the Anaconda distribution and also see the instructions [here](#).
2. To start using ipython notebook, go to your desired workspace on the command line and type ipython notebook This should bring up a browser showing the ipython dashboard.
3. The first part of the lab requires you to go through python_tutorial.ipynb, posted on CCLE. To import it to your ipython dashboard, you can either put it directly to your directory or drag and drop to the center of the dashboard and select upload.
4. Then download lab0-dtft.ipynb from CCLE. Open it in iPython notebook and follow the instructions there to finish the lab.