▶

What are Jupyter notebooks?

Welcome to this lesson on using Jupyter notebooks. The notebook is a web application that allows you to combine explanatory text, math equations, code, and visualizations all in one easily sharable document. For example, here's one of my favorite notebooks shared recently, the analysis of gravitational waves from two colliding blackholes detected by the LIGO experiment. You could download the data, run the code in the notebook, and repeat the analysis, in effect detecting the gravitational waves yourself!

Notebooks have quickly become an essential tool when working with data. You'll find them being used for data cleaning and exploration, visualization, machine learning, and big data analysis. Here's an example notebook I made for my personal blog that shows off many of the features of notebooks. Typically you'd be doing this work in a terminal, either the normal Python shell or with IPython. Your visualizations would be in separate windows, any documentation would be in separate documents, along with various scripts for functions and classes. However, with notebooks, all of these are in one place and easily read together.

Notebooks are also rendered automatically on GitHub. It's a great feature that lets you easily share your work. There is also http://nbviewer.jupyter.org/ that renders the notebooks from your GitHub repo or from notebooks stored elsewhere.

Literate programming

Notebooks are a form of literate programming proposed by Donald Knuth in 1984. With literate programming, the documentation is written as a narrative alongside the code instead of sitting off by its own. In Donald Knuth's words