AND (a little bit of)

SciPy

What are Numpy and Scipy? Numpy and Scipy are open source, community developed and maintained Python modules. They have applications in machine learning, quantum computing, engineering, data science, image processing, all sorts of fields of science and mathematics and more.

Numpy stands for Numerical Python. Its main feature is its n-dimensional arrays. It also contains functions for random number generation and various fields of math.

Scipy stands for Scientific Python and is built on top of Numpy. It includes a lot of more complex mathematical functionality and expands more fully on some existing Numpy functions.

How to use Numpy and Scipy? Call “pip install numpy” and “pip install scipy” to install these modules. Import them in your Python files to use them. Try out the interactive shell on the Numpy website.

Numpy arrays Numpy allows you to make arrays with n-dimensions. This includes 1d (vectors), 2d (matrices), 3d and higher. Unlike Python lists, all numpy arrays are homogeneous. This comes with the benefit that they are faster and more compact(memory efficient) than Python lists and have a massive number of useful functions for manipulating and analyzing these arrays that can’t be done with heterogeneous lists. Some examples of functions you can use on numpy matrices are: dot products, matrix functions (like matrix addition/subtraction, multiplication, inverses, etc) and other linear algebra functions.

Demos to try out

-Showcase of numpy arrays and basic functions

-We can build a prediction model off of a dataset by using matrices in Numpy. To summarize it most quickly, we use matrix multiplication to find a prediction vector that will most closely map all of the input values of our data to the output values. This prediction vector can then be used on new data points to give a strong prediction on what the output will look like.
This is a showcase of creating a prediction model for the price of a computer given a lot of different specifications/variables.