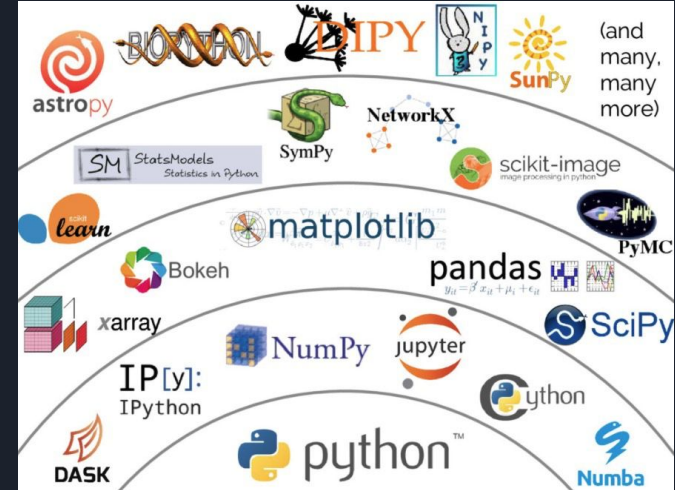
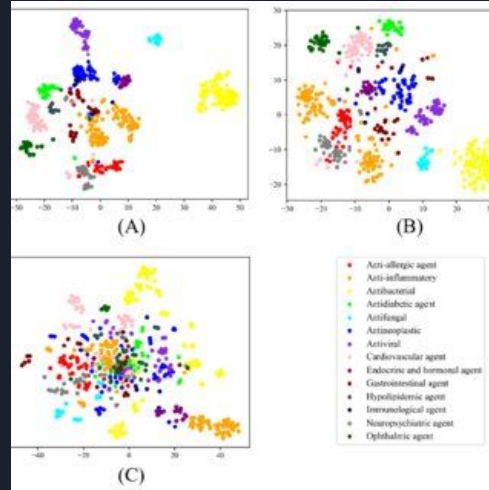


A decorative graphic on the left side of the slide. It consists of a blue parallelogram and a light green parallelogram, both tilted at an angle. The blue shape is in the foreground, and the green shape is partially behind it. They are set against a dark blue background with faint, lighter blue diagonal stripes.

How to Build Your Own Project

The Essentials

- 1) Git (and Github)
- 2) IDE
- 3) Programming Language, Required Libraries and Virt Env.





Things We're Going To Download

Mandatory

- Python (Or your language of choice)
- Pip
- Git and Github Desktop
- An IDE (VS Code)

Project Dependent

- Anaconda (for Python projects)
- Cuda (If you have a GPU)
- Git Bash

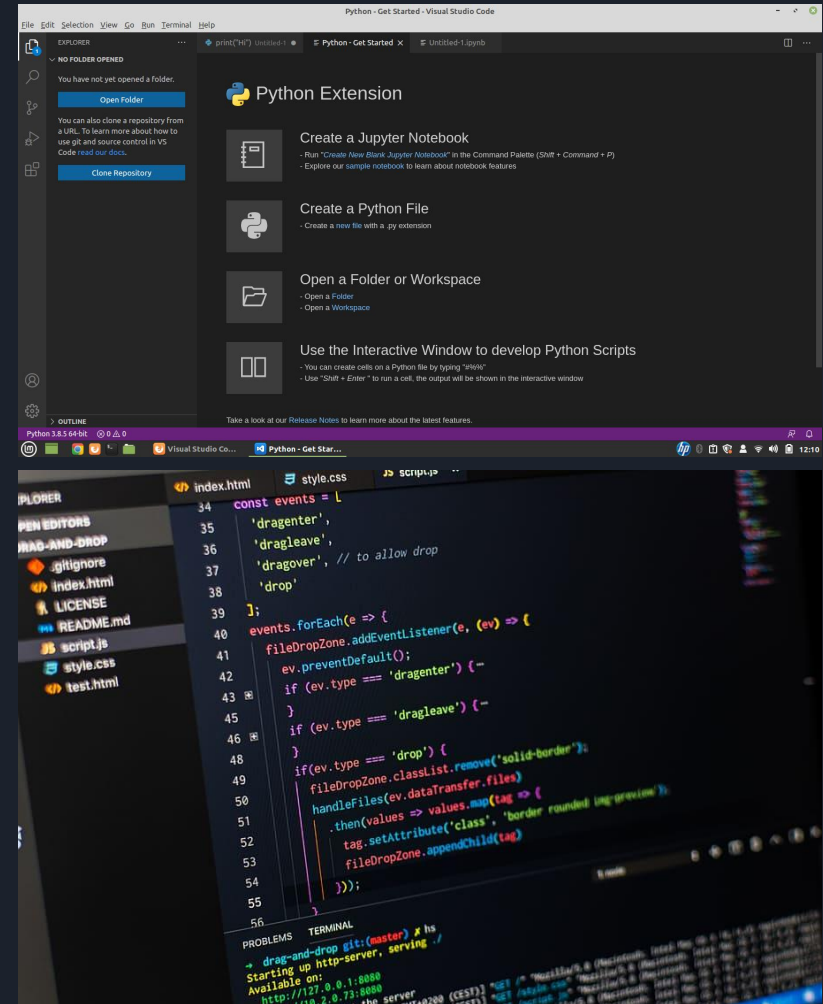


Git and Github

- Git allows for version control
 - If you mess up on a version you can go back to the previous one
- Github is a repository for Git
 - Can store multiple projects
 - Also allows you to collaborate with others
- Some basic git commands:
 - `git commit -m "message"` - Prepare to commit changes to the repository
 - `git push` - pushes changes to repository
 - `git clone /path/to/repository` - allows you to clone another repository onto your device
 - More commands:
<https://confluence.atlassian.com/bitbucketserver/basic-git-commands-776639767.html>

What's an IDE?

- Stands for “Integrated Development Environment”
- Is a place where you can create, run, and test your code
 - Often has convenient shortcuts/tools that you can use for your projects
- The one you use depends on your preferences and what you plan to work on.



Some Popular IDEs:

Visual Studio:

- Made by Microsoft
- More robust version of intellisense
 - Made for collaboration
 - Very popular



Xcode/Android Studio:

- Meant for iOS and Android development respectively



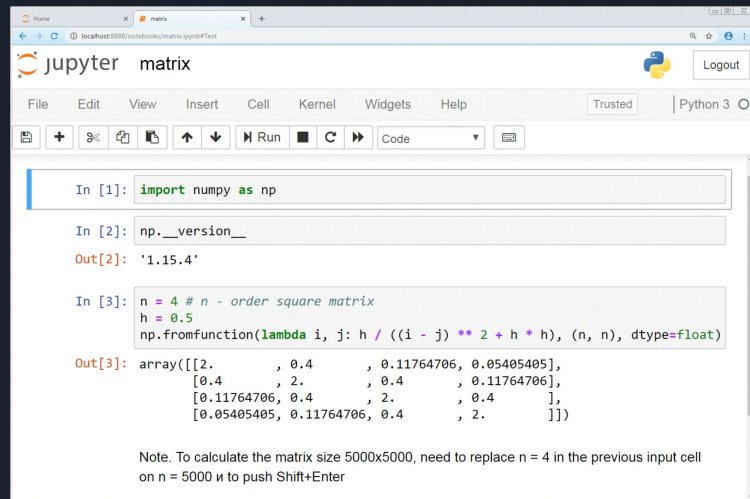
Visual Studio Code:

- Also Made by Microsoft
- Technically a text editor, but it extremely customizable due to a large amount of extensions available



Programming Languages + Required Libraries

- IDEs can allow different programming languages to be used
 - Different programming languages fit different needs
- Data science is often done in python
- You can often integrate needed functionalities that aren't present in original language by importing other libraries
 - Ex: numpy, math
- You can also include other modules for data analysis, machine learning, etc.
 - Ex: Keras, SciKit, Jupyter Notebook



The screenshot shows a Jupyter Notebook window titled 'matrix'. The interface includes a menu bar (File, Edit, View, Insert, Cell, Kernel, Widgets, Help) and a toolbar with icons for file operations, running cells, and code execution. The notebook contains three input cells and their corresponding outputs.

```
In [1]: import numpy as np
```

```
In [2]: np.__version__
```

```
Out[2]: '1.15.4'
```

```
In [3]: n = 4 # n - order square matrix
        h = 0.5
        np.fromfunction(lambda i, j: h / ((i - j) ** 2 + h * h), (n, n), dtype=float)
```

```
Out[3]: array([[2.         , 0.4        , 0.11764706, 0.05405405],
               [0.4        , 2.         , 0.4        , 0.11764706],
               [0.11764706, 0.4        , 2.         , 0.4        ],
               [0.05405405, 0.11764706, 0.4        , 2.         ]])
```

Note. To calculate the matrix size 5000x5000, need to replace n = 4 in the previous input cell on n = 5000 and to push Shift+Enter





Pip and Installation

To install packages you will not a package manager, the most popular being pip:

1. You will need Python installed, which can be found here: [Python Install](#)
2. Once downloaded, go to your terminal, and input the following:

```
python -m ensurepip --upgrade
```

- a. On windows replace 'python' with 'py'
3. Now to install any package, just use the following:

```
pip install packagename
```




Creating a Virtual Environment

Why?

- CLEAN!
 - Avoid messing up with libraries for other projects
- Makes it easier for your products to be reproduced

```
pip install pipenv
```

```
pipenv install
```

```
pipenv shell
```



Tutorial

- Download Visual Studio Code and Github
- Clone the repository here:
https://github.com/couchsnail/ds3_w24_byo
- You can fill out the Notebook yourself!
 - A sample of what real data science projects are like



Further Resources

A more in-depth tutorial to Git and Github:

<https://product.hubspot.com/blog/git-and-github-tutorial-for-beginners>

How to use JupyterNotebooks on vscode:

<https://code.visualstudio.com/docs/datascience/data-science-tutorial>