

Guide to Azure & Jupyter

Using technology resources in SOC 295

Overview	1
Jupyter on Your Own Computer	1
Using Azure	2
First Time You Use Azure Notebooks	2
Normal Log In	4
Load a New Lab or Project	4
Working on Your Labs / Projects	6
Jupyter Labs	8
Knowing Your Way around	8
Running Code	9
Editing Cells and Writing Answers	10
Saving and Sharing Your Work	10

Overview

This guide is meant to help you get started using Azure and Jupyter Labs. Please read it carefully, because computers like it when we do things exactly right. We will also go over this material together in lab sessions. If you are still having difficulty after trying the instructions here, please reach out to your GSI. Computers can be tricky things, so we set aside a lot of time to help students with technical issues this semester.

Jupyter on Your Own Computer

In this class, we're setting everyone up with Jupyter in Microsoft's Azure cloud for simplicity. You can also install Jupyter on your own computer (Windows, Mac, Linux, they all work!). The best way to do that is with something called Anaconda: <https://www.anaconda.com/distribution>

Using Azure

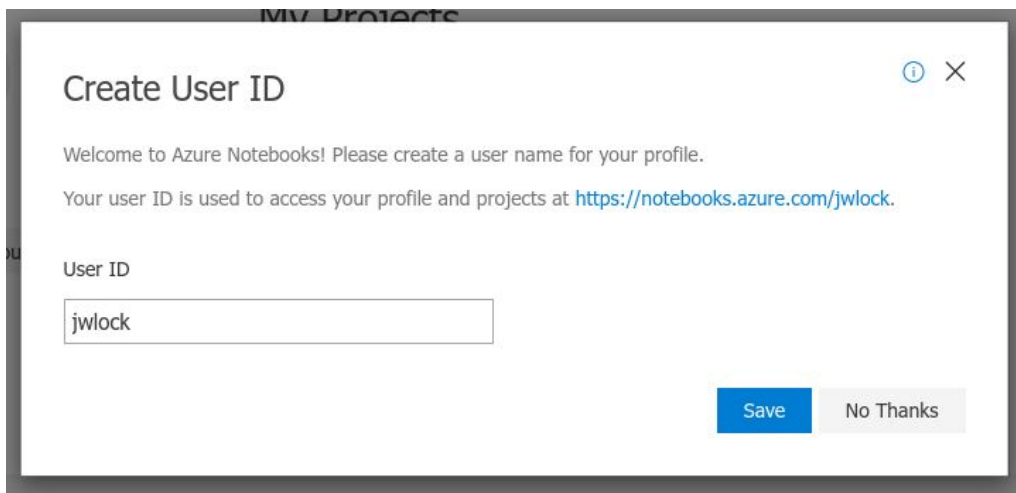
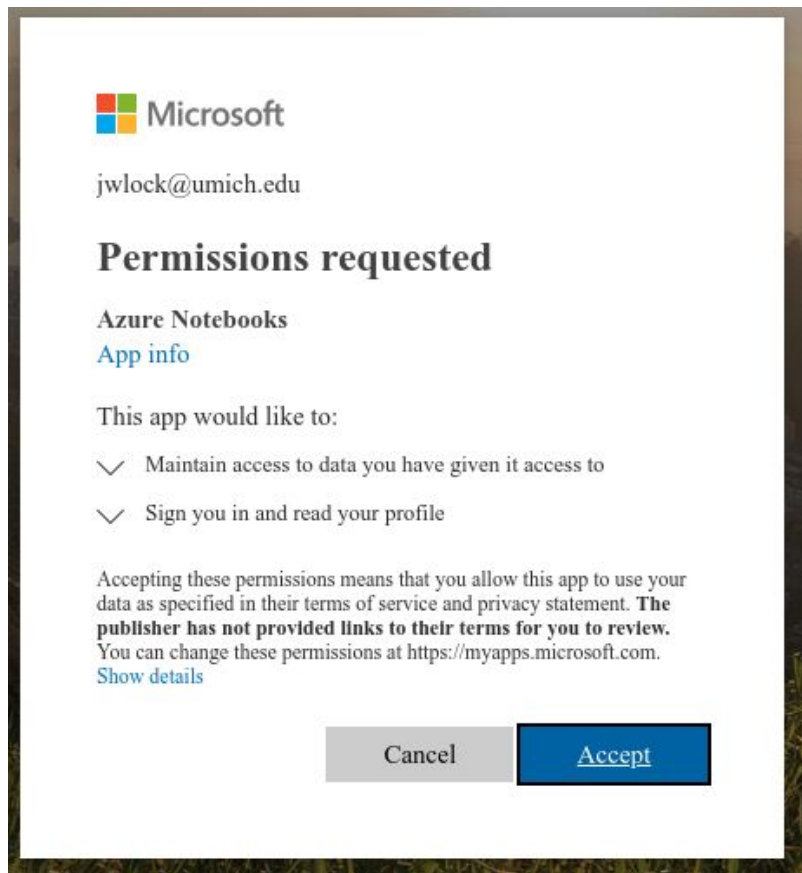
First Time You Use Azure Notebooks

Step 1: Go to <https://notebooks.azure.com> .

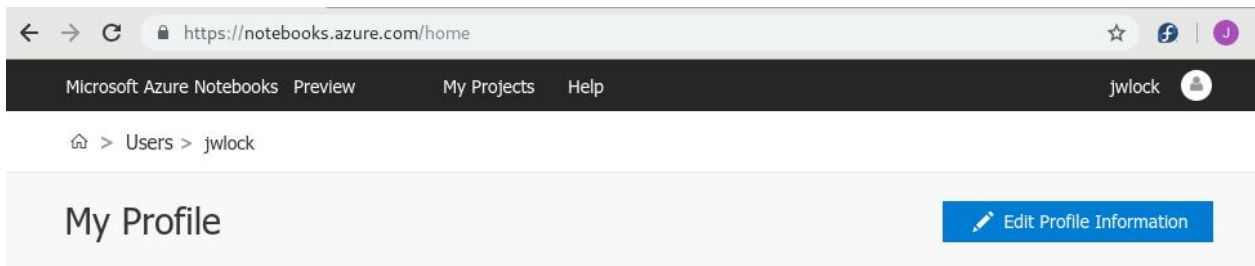
Step 2: “Sign In” using your UM email address. Note: you already have an account and do not need to register.

Step 3: Accept the permissions.

Step 4: Create User ID. This can be anything you want.



Step 5: Edit Profile Information



My Projects

You have no projects.
Would you like to [create one now?](#)

jwlock  

Complete your profile

My Starred Projects

You have no starred projects.
To add starred projects, click the star button on any project card or page.

Step 6: Turn on **both** “Unified Frontend for Notebooks” and “Run JupyterLab by Default”

Enable Site Features

On Off

Unified Frontend for Notebooks
Enables the Unified Azure Front End for Azure Notebooks. With this setting on Notebooks startup faster, you are allowed to persist your notebook extension options, and notebooks won't be shutdown when your kernels are shutdown due to inactivity. Some features require this. For example: [JIT Azure Access](#) is not available with this turned off.

On Off

Run in JupyterLab by default
If enabled, notebooks will be always opened in JupyterLab.

Normal Log In

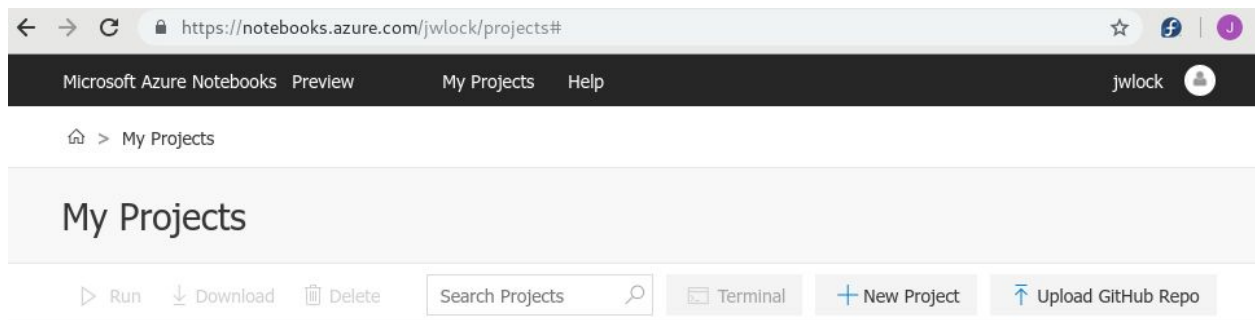
Step 1: Go to <https://notebooks.azure.com> .

Step 2: “Sign In” using your UM email address.

Load a New Lab or Project

Step 1: After logging in, go to “My Projects”

Step 2: Click “Upload Github Repo”



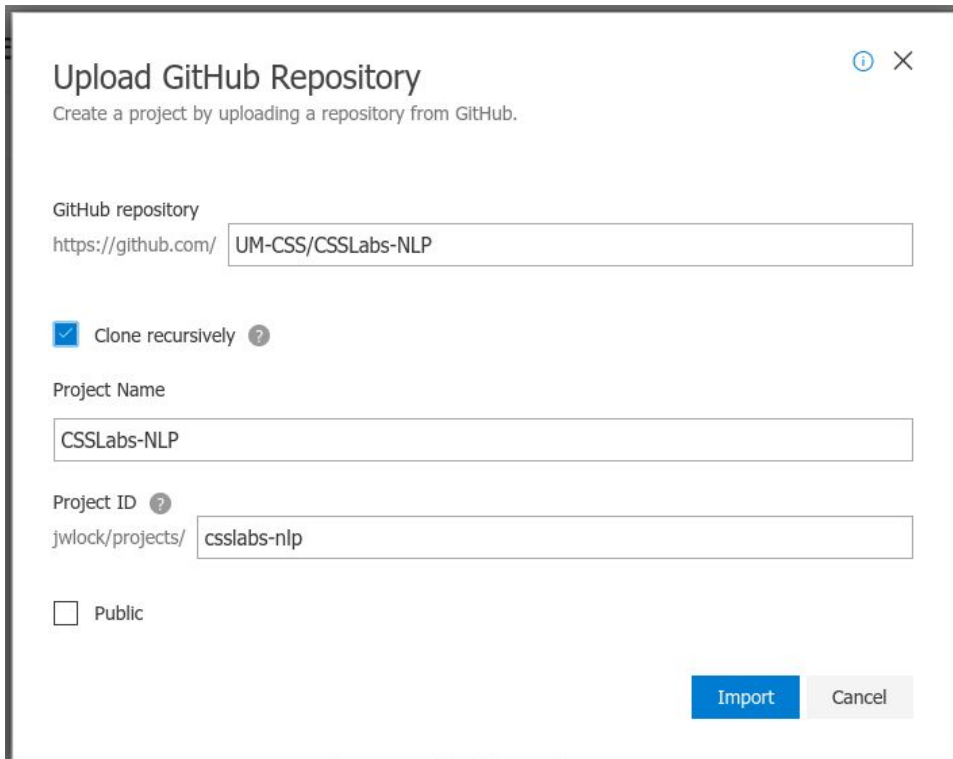
Seems a little bit lonely here.
Create a new project or upload one using the buttons above.

Step 3: Paste the lab's github link into the first open box

Step 4: Check "Clone recursively"

Step 5: Uncheck "Public"

Step 6: Click "Import"



Upload GitHub Repository ⓘ ✕

Create a project by uploading a repository from GitHub.

GitHub repository
https://github.com/

Clone recursively ⓘ

Project Name

Project ID ⓘ
jwlock/projects/

Public

Working on Your Labs / Projects

Step 1: Go to “My Projects”

Step 2: Double click the project you want to open

Microsoft Azure Notebooks Preview My Projects Help jwlock

Home > My Projects

My Projects

Run Download Delete Search Projects Terminal + New Project Upload GitHub Repo

✓	👁	Name	Status	Stars	Clones	Modified On	Created On
		CSSLabs-Algorithms-Society	Running	0	0	Apr 13, 2019	Apr 13, 2019
		CSSLabs-Contagion	Stopped	0	0	Apr 8, 2019	Apr 8, 2019
		CSSLabs-NLP	Stopped	0	0	Apr 8, 2019	Apr 7, 2019
		Drawing-Conclusions	Stopped	0	0	Apr 8, 2019	Apr 8, 2019

Showing 4 projects

Step 3: Double click the file you want to open.

- Generally, you will want to open one of the “.ipynb” files. Your instructor will tell you which one to use for the week.

The screenshot shows the Microsoft Azure Notebooks interface. At the top, there is a navigation bar with 'Microsoft Azure Notebooks', 'Preview', 'My Projects', and 'Help'. The user's name 'jwlock' is visible in the top right. Below the navigation bar, the breadcrumb path is 'My Projects > CSSLabs-NLP'. The main header for the project 'CSSLabs-NLP' includes a description 'User Guide for CSS NLP Lab Notebooks', a link to the GitHub repository 'https://github.com/UM-CSS/CSSLabs-NLP', and a status of 'Stopped'. There are buttons for 'Clone' (0), 'Star' (0), 'Project Settings', 'Download Project', and 'Share'. Below the header is a search bar and a 'Run on Free Co...' button. The main content area displays a table of files and folders:

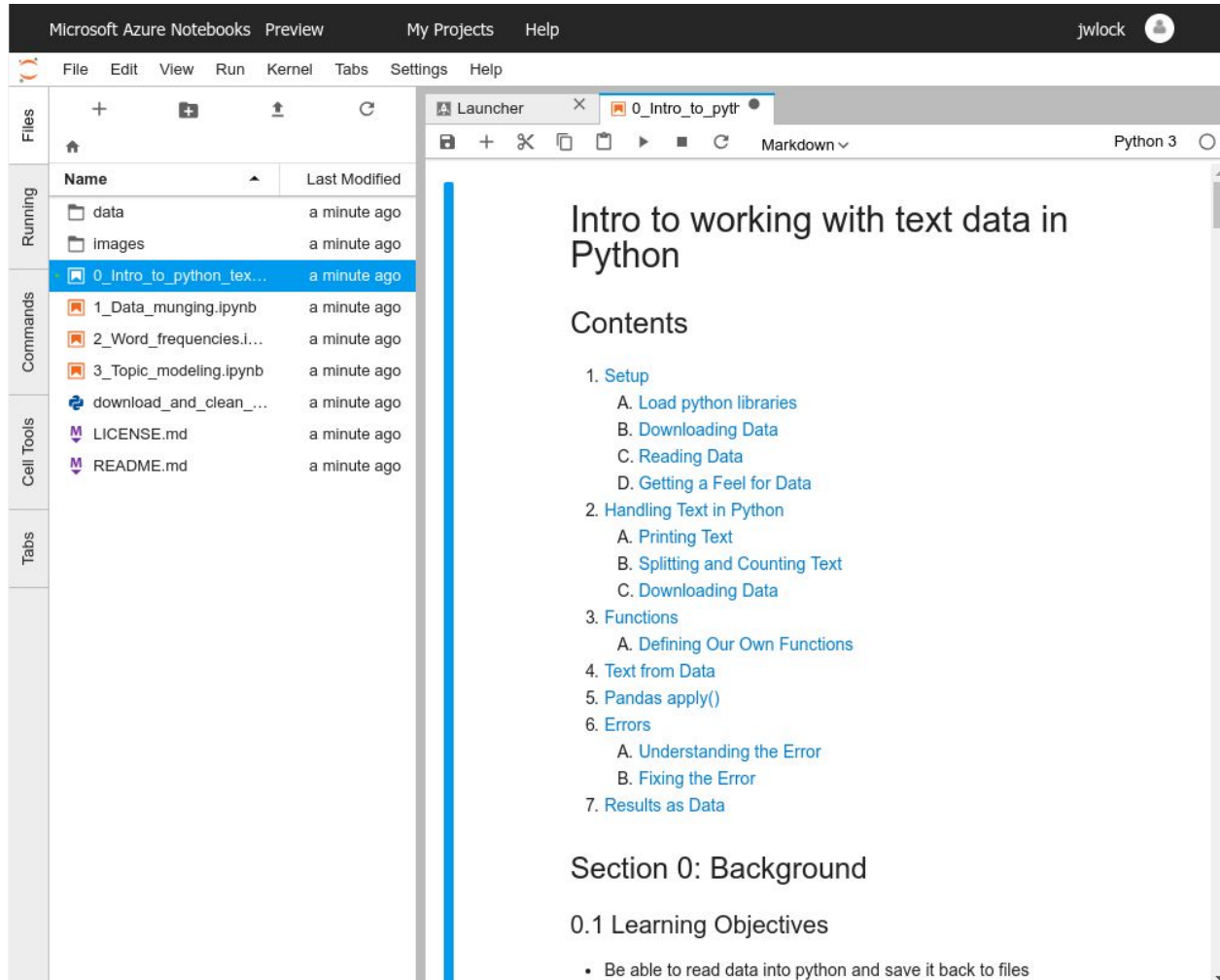
Name	File Type	Modified On	Created On
0_Intro_to_python_text.ipynb	Notebook	Apr 7, 2019	
1_Data_munging.ipynb	Notebook	Apr 7, 2019	
2_Word_frequencies.ipynb	Notebook	Apr 7, 2019	
3_Topic_modeling.ipynb	Notebook	Apr 7, 2019	
data	Folder		
download_and_clean_data.py	Python	Apr 7, 2019	
images	Folder		
LICENSE.md	Markdown	Apr 7, 2019	
README.md	Markdown	Apr 7, 2019	

Showing 9 search results (2 hidden)

Jupyter Labs

Knowing Your Way around

When you open Jupyter Lab, it should look something like this:



There are several important things on this screen:

- “Files” on the far left side panel. You can click that to show or hide what files are in your project. You can click files in this list to open them.
- Tabs: Just like the tabs in your browser, these let you switch between open files.
- The “Kernel” menu: At the top of the page is the kernel drop down menu. If you ever get into trouble, you can always click “Kernel” -> “Restart and clear all outputs.” This resets the code and lets you start over.
- **Important:** Python version: In the top right, you’ll see “Python 3.” In order for our labs to work correctly in Azure, you will need to click that and change it to “Python 3.6”

Running Code

- Before running code, make sure that the top right says “**Python 3.6**” and not “Python 3.” (You can change this by clicking on it.)
- The code is separated into chunks, called “cells.” Each cell is a box on the screen.
- To **run** the code in a cell, click inside that cell. Then either press [Shift]+[Enter] or click the triangle shaped “Play” icon near the top of the page.
 - Before a cell is run, it says “In []:” on the left.
 - While it is running, it says “In [*]:” on the left.
 - After the code in a cell finishes running, it says “In [1]:” on the left. The number indicates what order the code ran in. So the first cell you run is number 1, the second cell is number 2, and so on. If you run a cell another time, its number gets updated.
 - In general, you should run the cells in order from top to bottom because the cells at the bottom depend on those at the top.
- If a cell is running and you want it to **stop**, press the square stop button near the top.

The screenshot shows the Microsoft Azure Notebooks interface. At the top, there's a navigation bar with "Microsoft Azure Notebooks", "Preview", "My Projects", and "Help". The user's name "jwlock" is visible in the top right. Below this is a menu bar with "File", "Edit", "View", "Run", "Kernel", "Tabs", "Settings", and "Help". The main workspace is titled "lab_0_potholes" and shows a code cell. The cell's output area contains the text: "the city's population (size, age, health, race, class, education, income), infrastructure (housing, streets, traffic), and services (311, repairs, complaints about police)." Below the output is a section header "Section 2: Setup" and a sub-section "2.1 Import Python Modules". The text says "Run the following cell to import the necessary python modules." The code cell itself contains the following Python code:

```
In [ ]: import pandas as pd
from tqdm import tqdm
from scipy.stats import linregress, nbinom
import numpy as np
from statsmodels.nonparametric.smoothers_lowess import lowess
import matplotlib.pyplot as plt
plt.style.use('ggplot')

%matplotlib inline
```

Editing Cells and Writing Answers

- Everything you see in jupyter can be edited. We can change the code or add text.
- To edit something, whether it is code or text, simply double click on the spot you want to edit.
- You can then type whatever you want directly into the cell.
- When you're done, press [Shift]+[Enter] to run that cell.
- **Remember:** computers are very literal. If you are typing code, it needs to be exactly right. This can be frustrating at times because we all make typos. With patience and carefulness, you'll do just fine!

Saving and Sharing Your Work

- Inside a notebook, you can press [Ctrl]+[S] or click the "Save" icon (a floppy disk image) to save the notebook.
 - This only saves a copy in Azure! It doesn't save a copy to your computer.
- To download a copy of the notebook to your computer:
 - Open the "Files" list on the left.
 - Right click the name of the notebook.
 - Select "Download."
- To get a PDF of your notebook:
 - Click the "File" menu at the top of the page.
 - Click "Export Notebook As..."
 - Click "PDF"
- When you turn in your labs, please upload the PDF file to Canvas.