Lab 1: DC Resistivity

GEOL 4397: Electromagnetic Methods for Exploration
GEOL 6398: Special Problems

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Sept. 6th, 2018

UNIVERSITY of HOUSTON
YOU ARE THE PRIDE
EARTH AND ATMOSPHERIC SCIENCES

Agenda

- Account and environment setup
- Jupyter Notebook

Microsoft Azure

- Open, flexible, enterprise-grade cloud computing platform
- We are going to use Microsoft Azure Notebooks, which is free!

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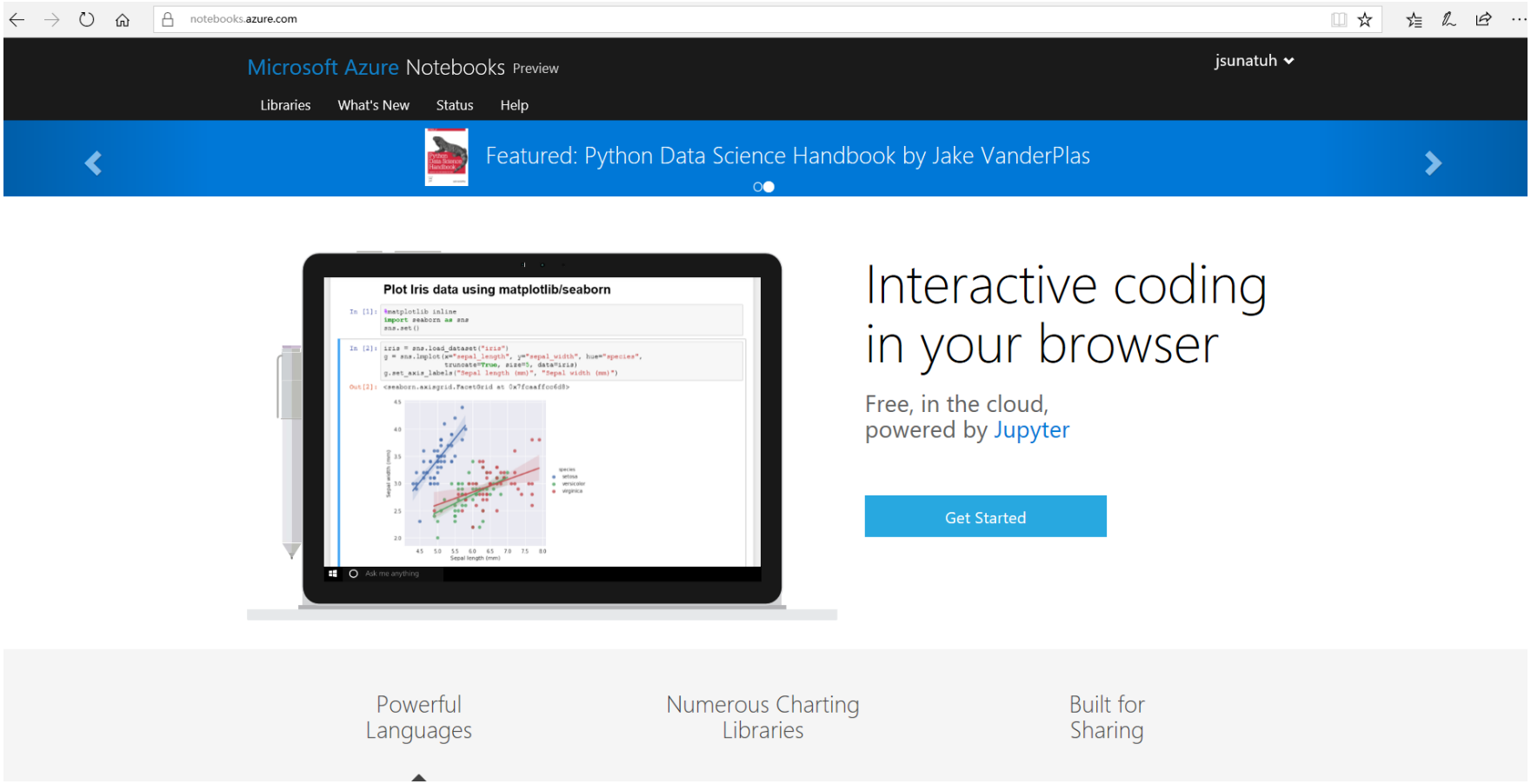
- We are going to use Microsoft Azure Notebooks, which is free!

- Because it is free, sometime it is slow …

- So, be patient!

Microsoft Azure Notebooks

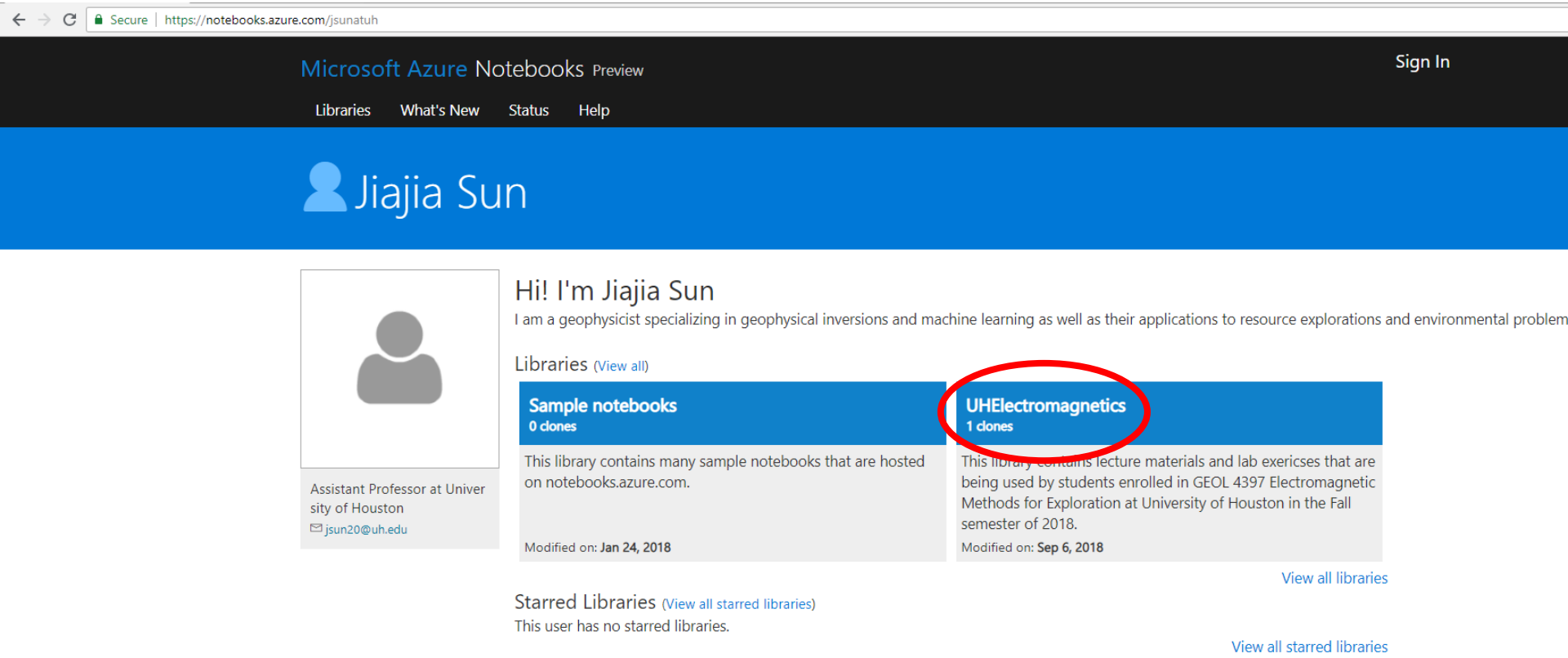


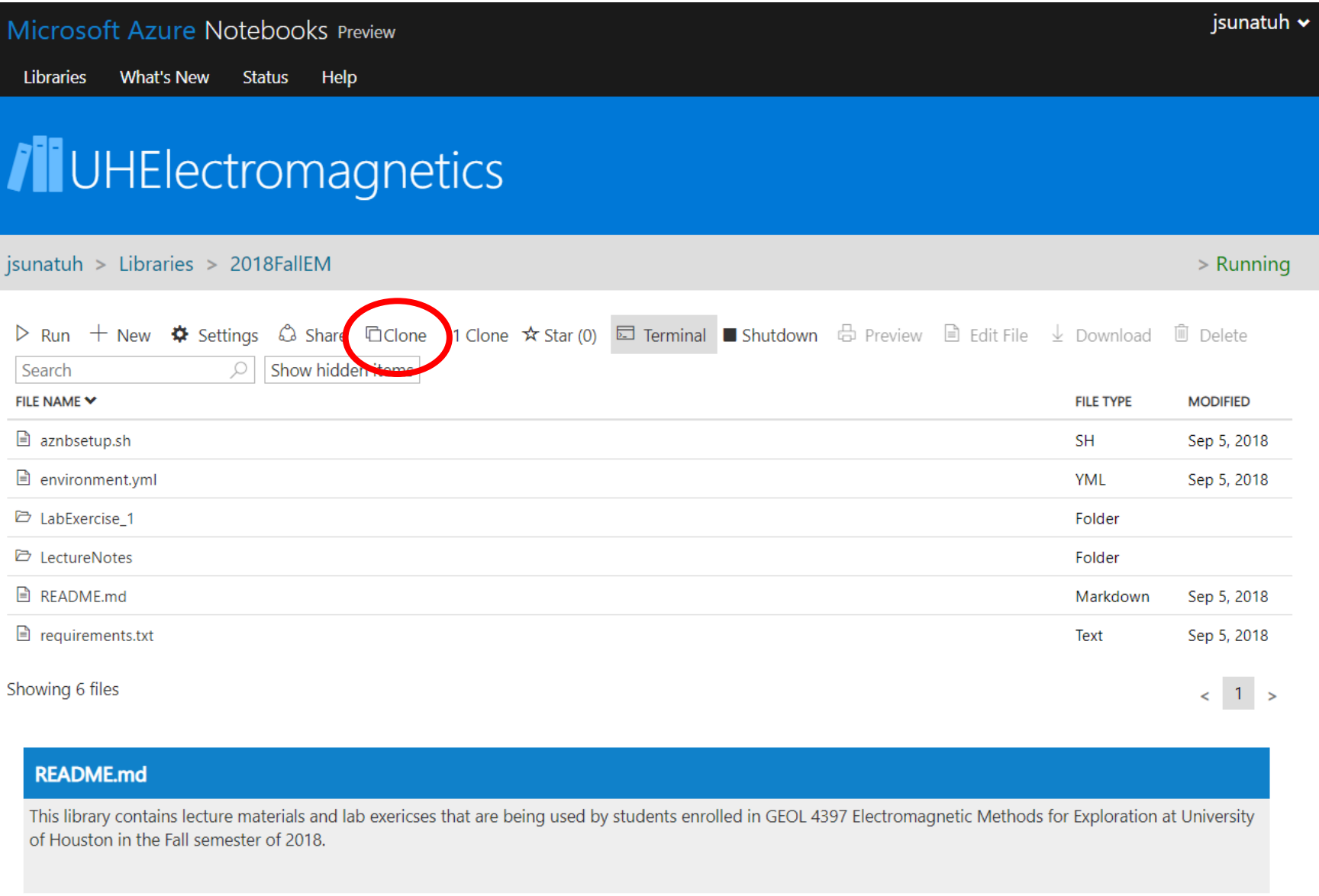
Set up account

- Open a web browser
- Go to https://notebooks.azure.com/
- Log in using your cougarnet account (you can also create a personal account for free)

Clone my libarary

- Open a new tab in your web browser
- Enter https://notebooks.azure.com/jsunatuh
- This is where the lab exercises will be distributed


Secure | https://notebooks.azure.com/jsunatuh
Microsoft Azure Notebooks Preview
Sign In
Libraries
What's New
Status
Help
Jiajia Sun
Assistant Professor at Univer sity of Houston
jsun20@uh.edu
Hi! I'm Jiajia Sun
I am a geophysicist specializing in geophysical inversions and machine learning as well as their applications to resource explorations and environmental problem
Libraries (View all)
Sample notebooks
0 clones
This library contains many sample notebooks that are hosted on notebooks.azure.com.
Modified on: Jan 24, 2018
UHElectromagnetics
1 clones
This library contains lecture materials and lab exericses that are being used by students enrolled in GEOL 4397 Electromagnetic Methods for Exploration at University of Houston in the Fall semester of 2018.
Modified on: Sep 6, 2018
View all libraries
Starred Libraries (View all starred libraries)
This user has no starred libraries.
View all starred libraries


Microsoft Azure Notebooks Preview
jsunatuh
Libraries
What's New
Status
Help
UHElectromagnetics
jsunatuh > Libraries > 2018FallEM
> Running
Run
New
Settings
Share
Clone
1 Clone
Star (0)
Terminal
Shutdown
Preview
Edit File
Download
Delete
Search
Show hidden items
FILE NAME
FILE TYPE
MODIFIED
aznbsetup.sh
SH
Sep 5, 2018
environment.yml
YML
Sep 5, 2018
LabExercise_1
Folder
LectureNotes
Folder
README.md
Markdown
Sep 5, 2018
requirements.txt
Text
Sep 5, 2018
Showing 6 files
< 1 >
README.md
This library contains lecture materials and lab exericses that are being used by students enrolled in GEOL 4397 Electromagnetic Methods for Exploration at University of Houston in the Fall semester of 2018.

B-plan (in case Azure server is down)

https://mybinder.org/v2/gh/rnurindr/EM_test1/master

Thanks to Felicia Nurindrawati!

Jupyter Notebook

What is it?

- A interactive web application in which you can create and share documents that contain live code, equations, text, videos and images
- Programming in the browser
- Good for writing code with accompanying texts, images and even videos
- Popular among data scientists

Notebook user interface

- Notebook name
- Menu bar
  - Different functions available
- Toolbar
  - Quick access to most-used operations
- Code cell

Structure of a notebook

- A notebook consists of a sequence of cells
- A cell is a multi-line text input field
- Its contents get executed by clicking 'Play' button
- Three types of cells:
  - Code cells
  - Markdown cells
  - Raw cells
- Every cell starts off being a code cell, but its type can be changed by using a drop-down on the toolbar

http://jupyter-notebook.readthedocs.io/en/latest/notebook.html

Code cell

- Allows you to write and edit new code
- With full syntax highlighting and tab completion
- Default language is Python
  - Other languages such as Julia and R are also used
- Run the code by clicking 'Cell | Run Cells'

Markdown cell

- Provides a simple to include descriptive text and equations the complement the code
- When executed, the contents in a markdown cell are converted into the corresponding formatted rich text.
- Markdown headings
  - Provide structure for your document
  - Consist of 1 to 6 hash sign # followed by a blank space

Markdown heading

title

major headings

subheadings

4th level subheadings

Raw cell

- Output is the same as what you put down in a cell
- Not evaluated by the notebook

Additional resources:

- Markdown cheetsheet: https://medium.com/ibm-data-science-experience/markdown-for-jupyter-notebooks-cheatsheet-386c05aeebed
- https://github.com/adam-p/markdown-here/wiki/Markdown-Cheatsheet
- A primer on using Latex in Jupyter Notebook: http://data-blog.udacity.com/posts/2016/10/latex-primer/
- A good introduction to Jupyter Notebook: https://www.datacamp.com/community/tutorials/tutorial-jupyter-notebook
- A collection of notebooks: http://nb.bianp.net/sort/views/
- A Jupyter notebook on matplotlib: http://nbviewer.jupyter.org/github/jrjohansson/scientific-python-lectures/blob/master/Lecture-4-Matplotlib.ipynb

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jupyter notebook

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Dandan Chen

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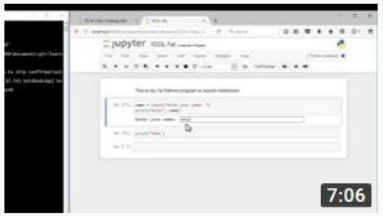
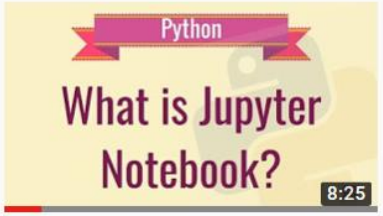
Jupyter Notebook Tutorial: Introduction, Setup, and Walkthrough
Corey Schafer • 224K views • 1 year ago
In this Python Tutorial, we will be learning how to install, setup, and use **Jupyter Notebooks**. **Jupyter Notebooks** have become very



Quick introduction to Jupyter Notebook
Michael Fudge • 17K views • 11 months ago
This this video we provide a quick overview of **Jupyter Notebook**. We'll explain the purpose of this web-based notebook



What is Jupyter Notebook?
codebasics • 36K views • 1 year ago
This tutorial explains what is **jupyter** or ipython **notebook**. **Jupyter** or ipython **notebook** is a web application that allows you to run live

Gerrit Gruben - Leveling up your Jupyter notebook skills
PyData • 4.8K views • 5 months ago
Description Most of us regularly work with **Jupyter notebooks**, but fail to see obvious productivity gains involving its usage. Did you

Jupyter in Depth