Week 2 Lab

Azure cloud computing & Jupyter Notebook

GEOL 4397: Data analytics and machine learning for geoscientists
GEOL 6398: Special Problems

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Jan. 22nd, 2019

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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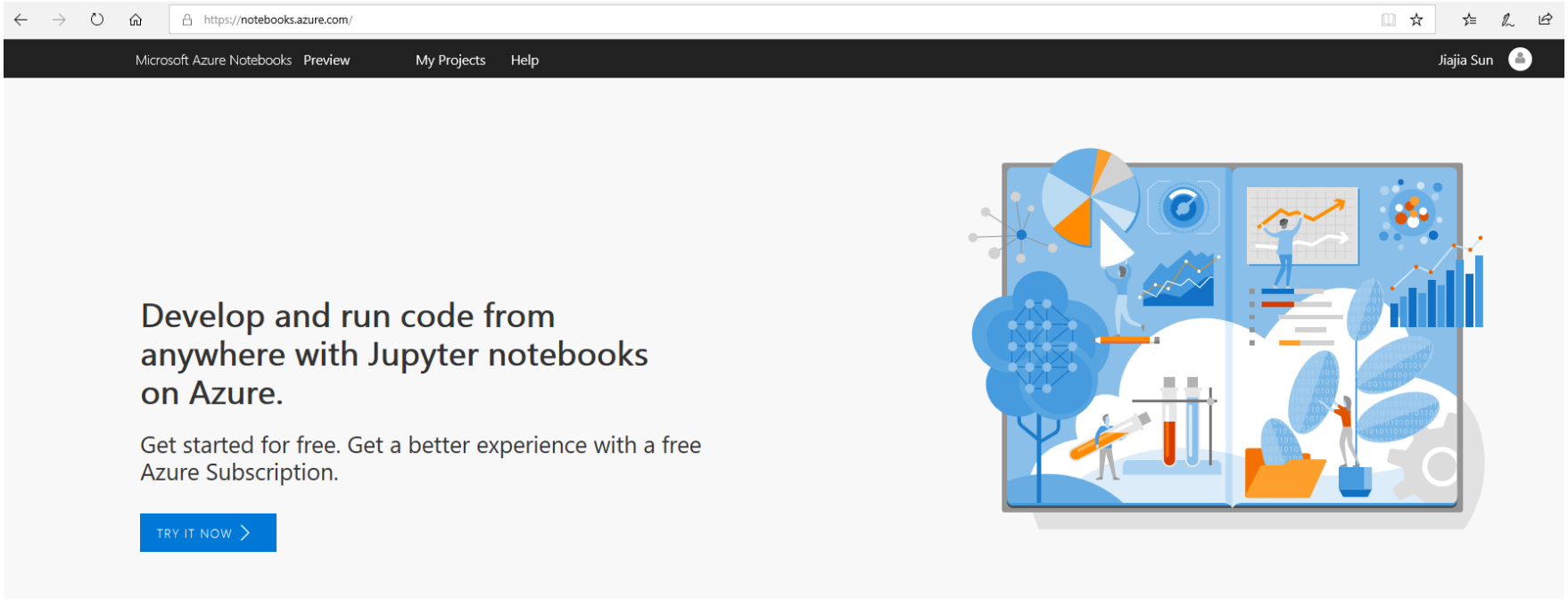
- Because it is free, sometime it is slow …

- So, be patient!

Microsoft Azure Notebooks

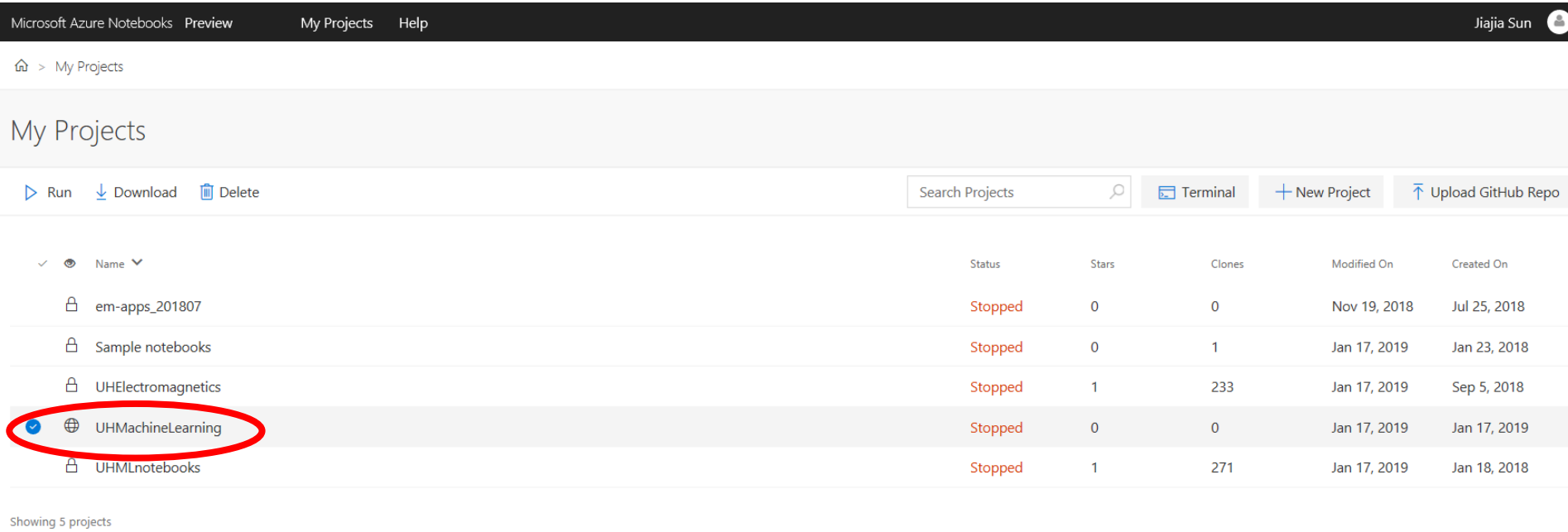


Set up account

- 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 library

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


Microsoft Azure Notebooks Preview
My Projects
Help
Jiajia Sun
My Projects
My Projects
Run
Download
Delete
Search Projects
Terminal
New Project
Upload GitHub Repo
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Status
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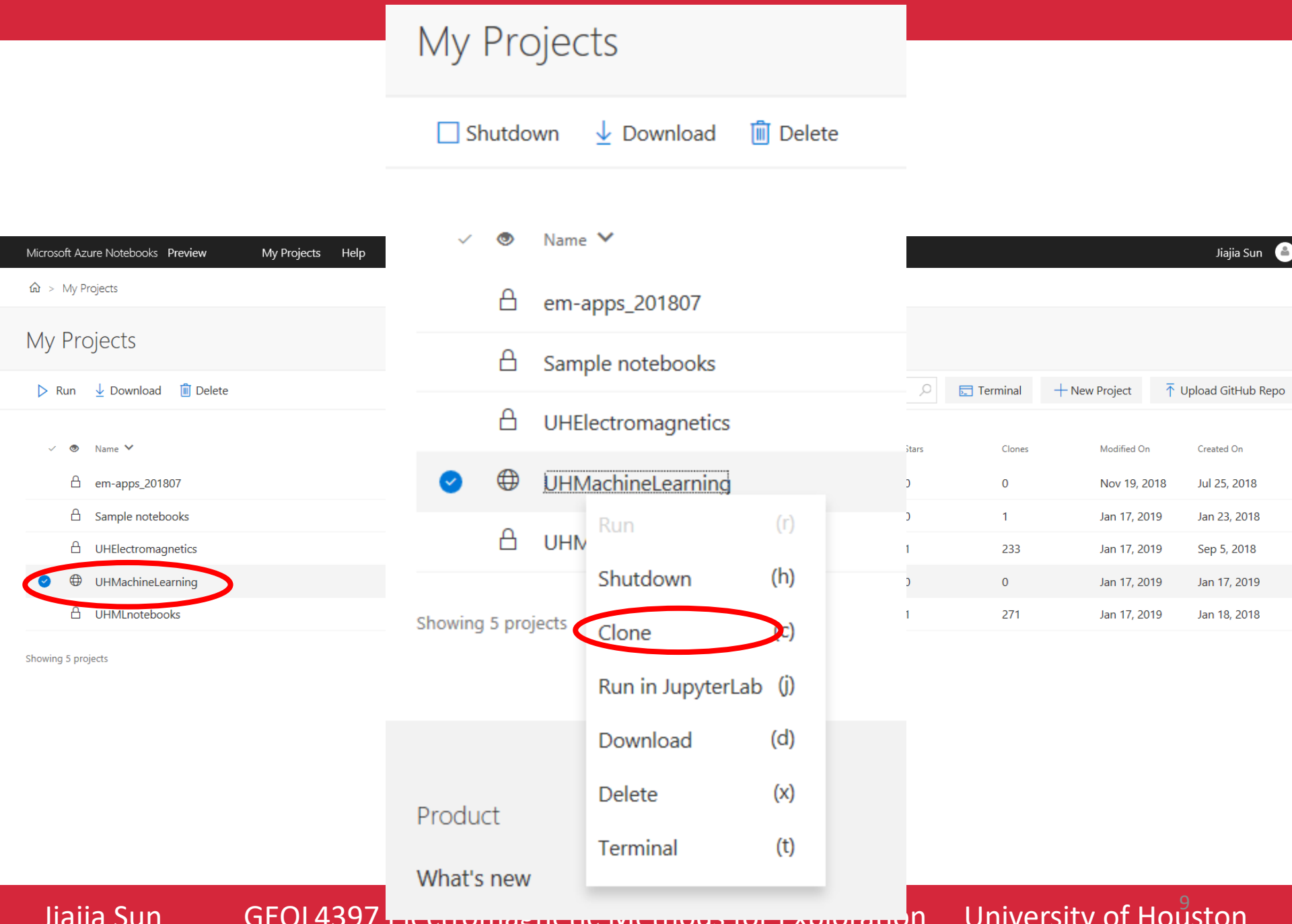
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Sample notebooks
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Showing 5 projects
Run (r)
Shutdown (h)
Clone (c)
Run in JupyterLab (j)
Download (d)
Delete (x)
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Product
What's new
Microsoft Azure Notebooks Preview
My Projects
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My Projects
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New Project
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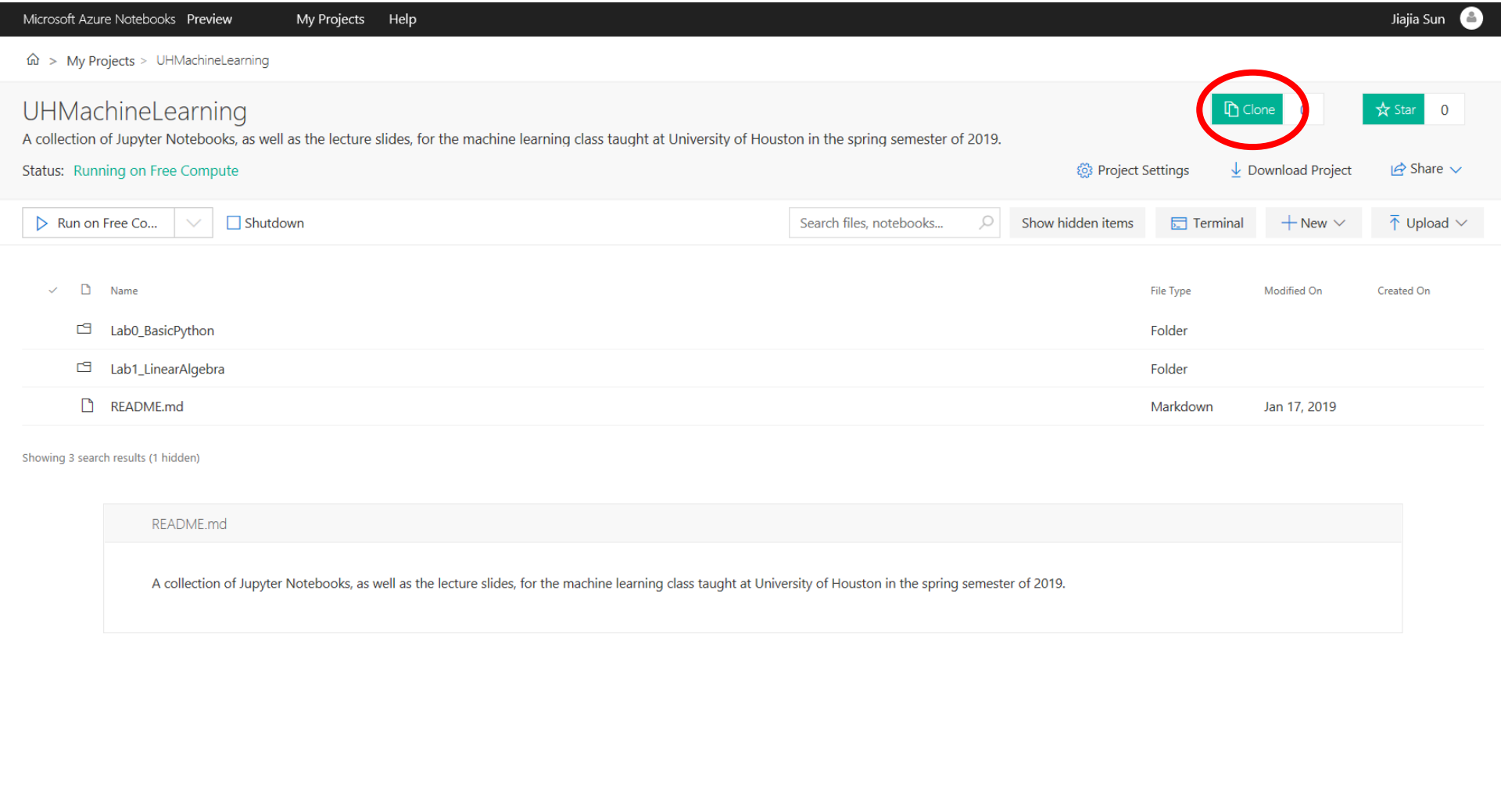
Microsoft Azure Notebooks Preview
My Projects
Help
Jiajia Sun
My Projects > UHMachineLearning
UHMachineLearning
A collection of Jupyter Notebooks, as well as the lecture slides, for the machine learning class taught at University of Houston in the spring semester of 2019.
Clone
Star 0
Status: Running on Free Compute
Project Settings
Download Project
Share
Run on Free Co...
Shutdown
Search files, notebooks...
Show hidden items
Terminal
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File Type
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Created On
Lab0_BasicPython
Folder
Lab1_LinearAlgebra
Folder
README.md
Markdown
Jan 17, 2019
Showing 3 search results (1 hidden)
README.md
A collection of Jupyter Notebooks, as well as the lecture slides, for the machine learning class taught at University of Houston in the spring semester of 2019.

B-plan (in case Azure server is down)

https://mybinder.org/v2/gh/jiajiasun/UHMachineLearning/master

C-plan (in case Binder server is down)

https://drive.google.com/open?id=14S6I7HU7aGZGcV8s7SXXd8A3DwDHl5l_

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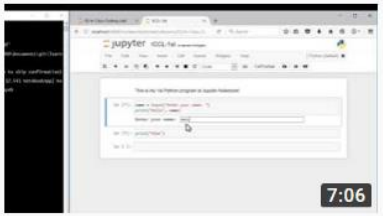
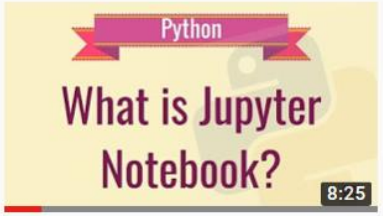
Jupyter Notebook Tutorial: Introduction, Setup, and Walkthrough
Corey Schafer • 224K views • 1 year ago
In this Python Tutorial, we will be learning how to install, setup, and use **Jupyter Notebooks**. **Jupyter Notebooks** have become very



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