Start Lab 01:15:00

Pairs Trading Strategy

1 hour 15 minutes Free ★★★★☆

Overview

Pairs trading is a strategy that attempts to take advantage of the divergence between assets whose ratio or difference in price is typically constant over time. One of the biggest advantages of pairs trading is that it enables traders to profit regardless of market conditions.

In this lab, some of the concepts behind pairs trading will be explored by leveraging the Auquan Toolbox, a Python library that provides tools for developing trading algorithms.

This lab is based on the Auquan blog post Pairs Trading using Data-Driven Techniques: Simple Trading Strategies Part 3.

Objectives

In this lab, you will learn about the following:

- Define cointegration and perform statistical testing to check for it.
- Find pairs of securities that are cointegrated.
- Devise a trading strategy based on cointegrated securities.
- Backtest the trading strategy to check for overfitting.

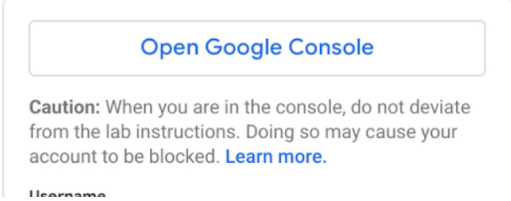
Set up your environment

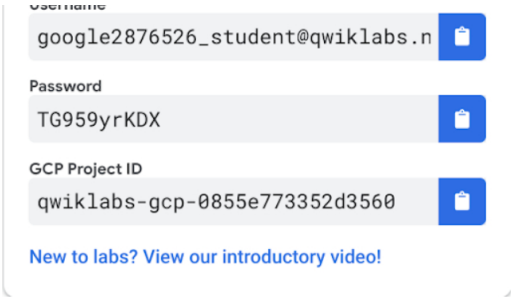
For each lab, you get a new Google Cloud project and set of resources for a fixed time at no cost.

1. Make sure you signed into Qwiklabs using an **incognito window**.
2. Note the lab's access time (for example, 02:00:00 and make sure you can finish in that time block.

   There is no pause feature. You can restart if needed, but you have to start at the beginning.

3. When ready, click START LAB.
4. Note your lab credentials. You will use them to sign in to the Google Cloud Console.





5. Click **Open Google Console**.

6. Click **Use another account** and copy/paste credentials for **this** lab into the prompts.

> If you use other credentials, you'll get errors or **incur charges**.

7. Accept the terms and skip the recovery resource page.

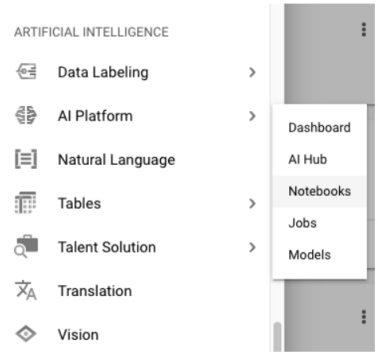
> Do not click **End Lab** unless you are finished with the lab or want to restart it. This clears your work and removes the project.

Launch AI Platform Notebooks

To launch AI Platform Notebooks:

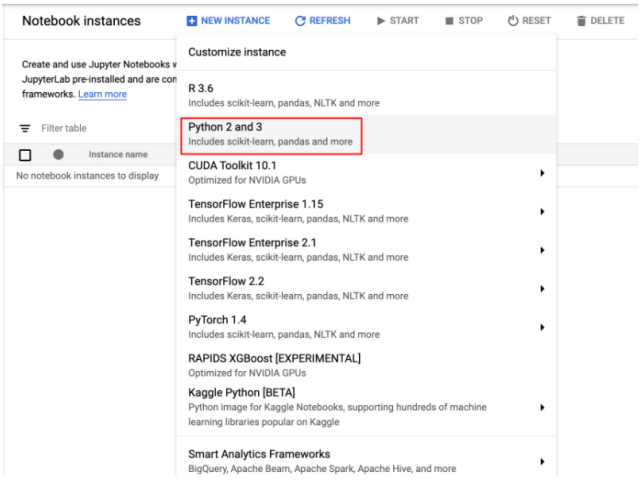
Step 1

Click on the **Navigation Menu**. Navigate to **AI Platform**, then to **Notebooks**.

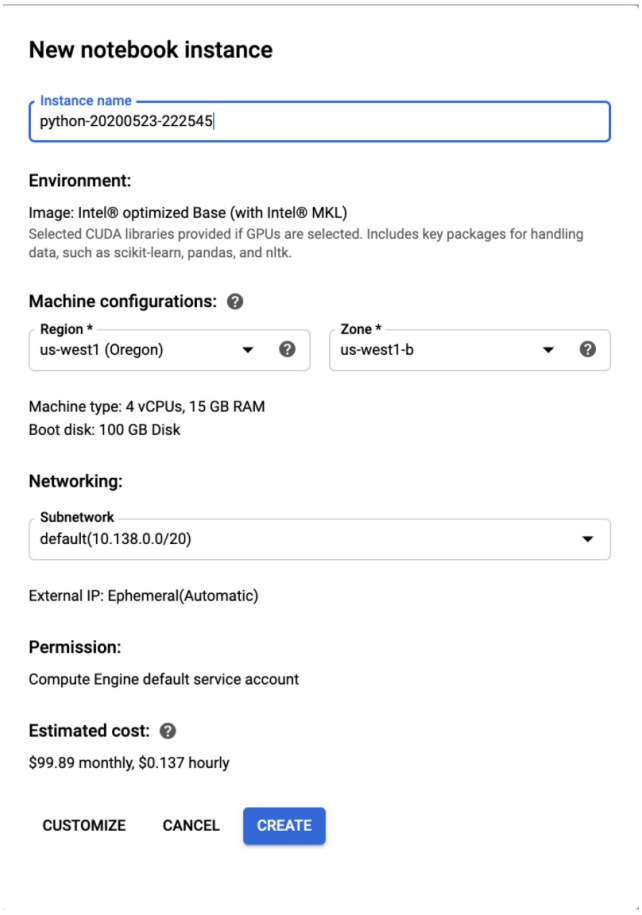


Step 2

On the Notebook instances page, click + NEW INSTANCE . In the menu that pops down, select the **Python 2 and 3** option:



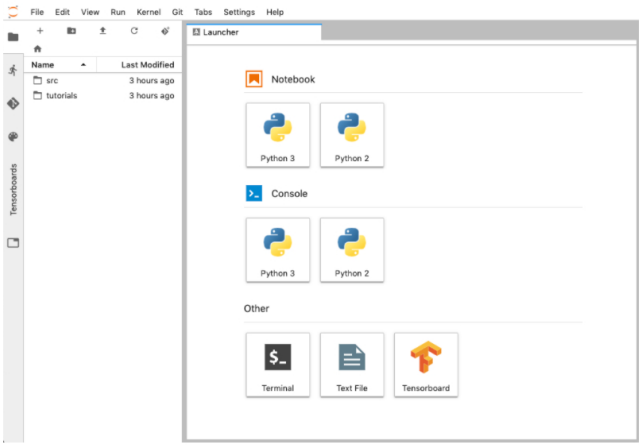
In the pop-up, confirm the name of the instance and click **Create**.



The new VM will take 2-3 minutes to start.

Step 3

Click **Open JupyterLab**. A JupyterLab window will open in a new tab.

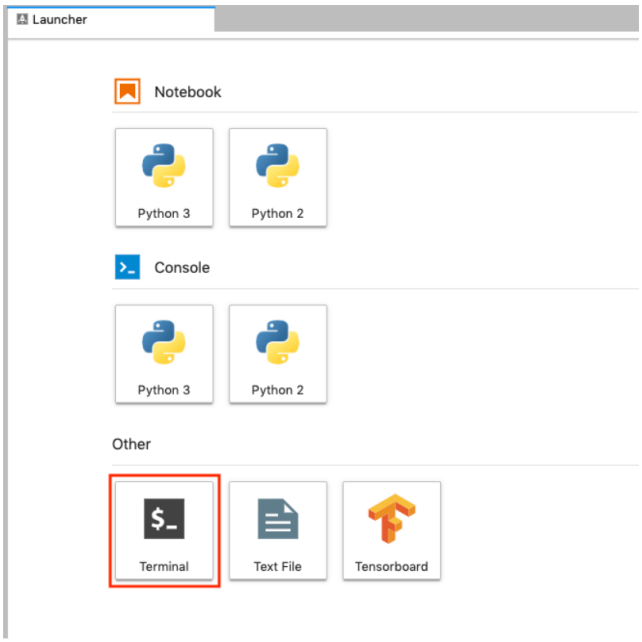


Clone Auquan Tutorials

To clone the Auquan tutorial notebooks into your JupyterLab instance:

Step 1

In JupyterLab, click the Terminal icon to open a new terminal.



Step 2

At the command-line prompt, type in the following command and press Enter.

```
git clone https://github.com/Auquan/Tutorials.git
```

Step 3

Confirm that you have cloned the repository by double clicking on the `Tutorials` directory and ensuring that you can see its contents.

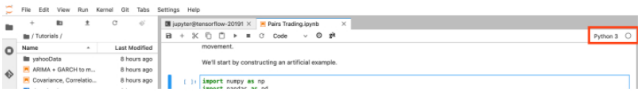
Pairs Trading

Step 1

Navigate to the **Tutorials** directory and open **Pairs Trading.ipynb**.

Step 2

Ensure you're using the Python 3 kernel by selecting `Python 3` from the upper right corner of the notebook.



Step 3

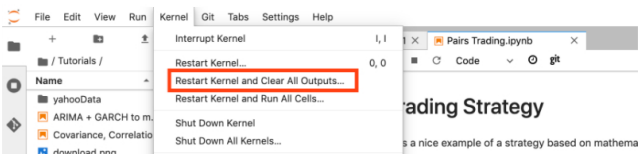
You'll need to install an additional library to complete the notebook. Create a new cell at the top of the notebook and execute the following code:

```
!pip install plotly --user
```

Please ignore any compatibility errors during installation of the libraries.

Step 4

In the notebook interface, click on **Kernel > Restart Kernel and Clear All Outputs**.



Step 5

Read the narrative and execute each cell in turn.

End your lab

When you have completed your lab, click **End Lab**. Qwiklabs removes the resources you've used and cleans the account for you.

You will be given an opportunity to rate the lab experience. Select the applicable number of stars, type a comment, and then click **Submit**.

The number of stars indicates the following:

- 1 star = Very dissatisfied
- 2 stars = Dissatisfied
- 3 stars = Neutral
- 4 stars = Satisfied
- 5 stars = Very satisfied

You can close the dialog box if you don't want to provide feedback.

For feedback, suggestions, or corrections, please use the **Support** tab.