



Data Science and Machine Learning Bootcamp

SAGEMAKER

Running Code

Running code in our Machine can be quite intensive, especially for Machine Learning.

What if we could get the code to run on "another machine" so that we could go on with our lives?

Running code on the cloud allow us to do that

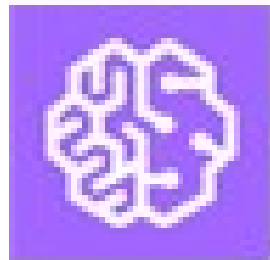
For that, lets explore AWS SageMaker

**Note: there is much more to the cloud than this that we will learn near the end of the course. We are learning SageMaker because it is good for you to run code during the course*

SageMaker

AWS SageMaker is a product created by amazon to run Jupyter Notebooks on “another computer” (owned by Amazon). It is great for data professionals, as the front end is Jupyter, so something you are used to.

Lets see what we need to do



Amazon SageMaker

Steps the account

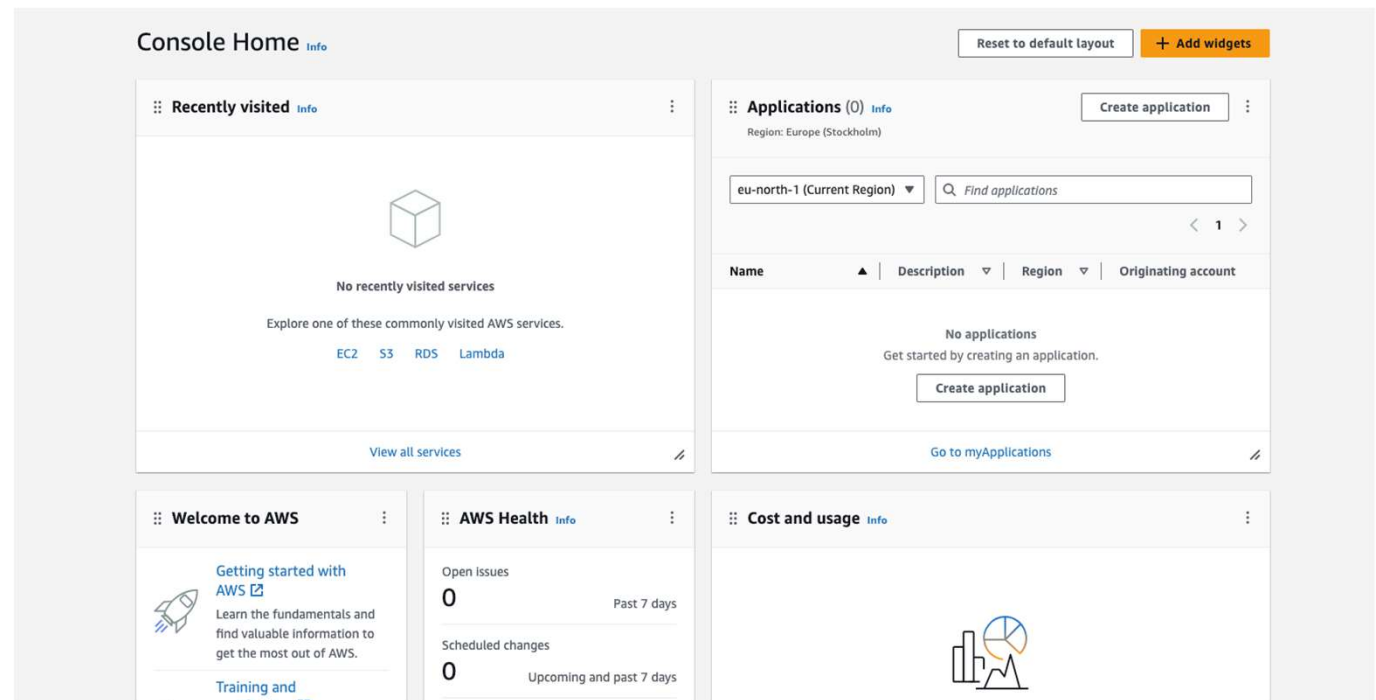
Go to AWS

- Create an account
- You will need to input: Name, (real) Email, Credit Card (Revolut Works), (real) Phone Number
- Select the Basic Support (Free) plan

Login and run the code

Go to AWS

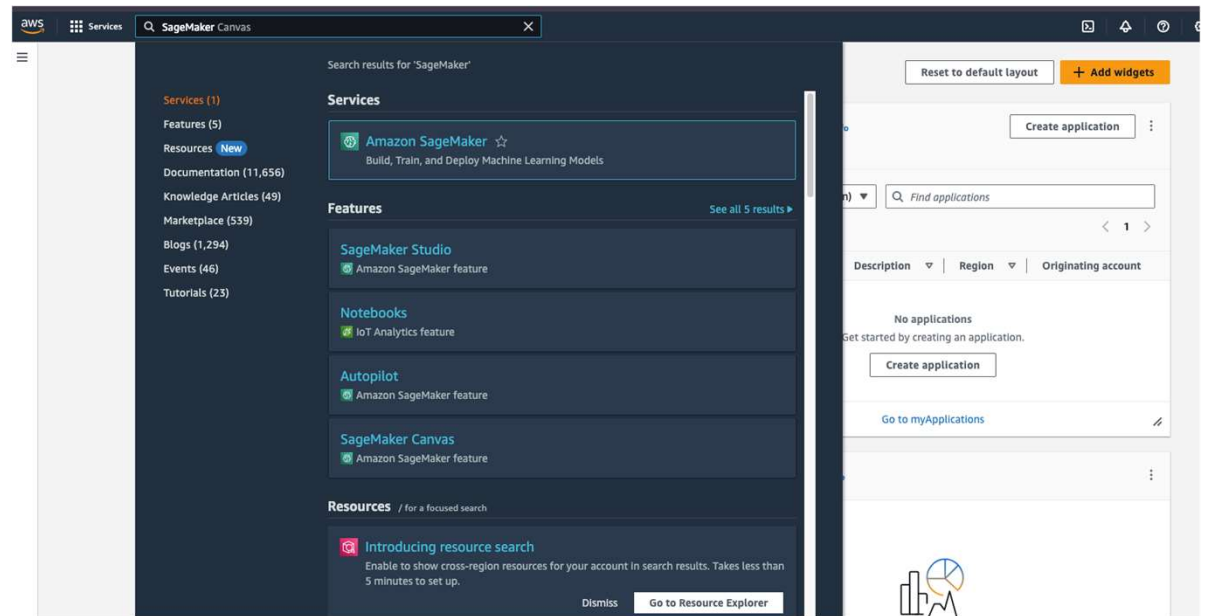
- Log in



Login and run the code

Go to AWS

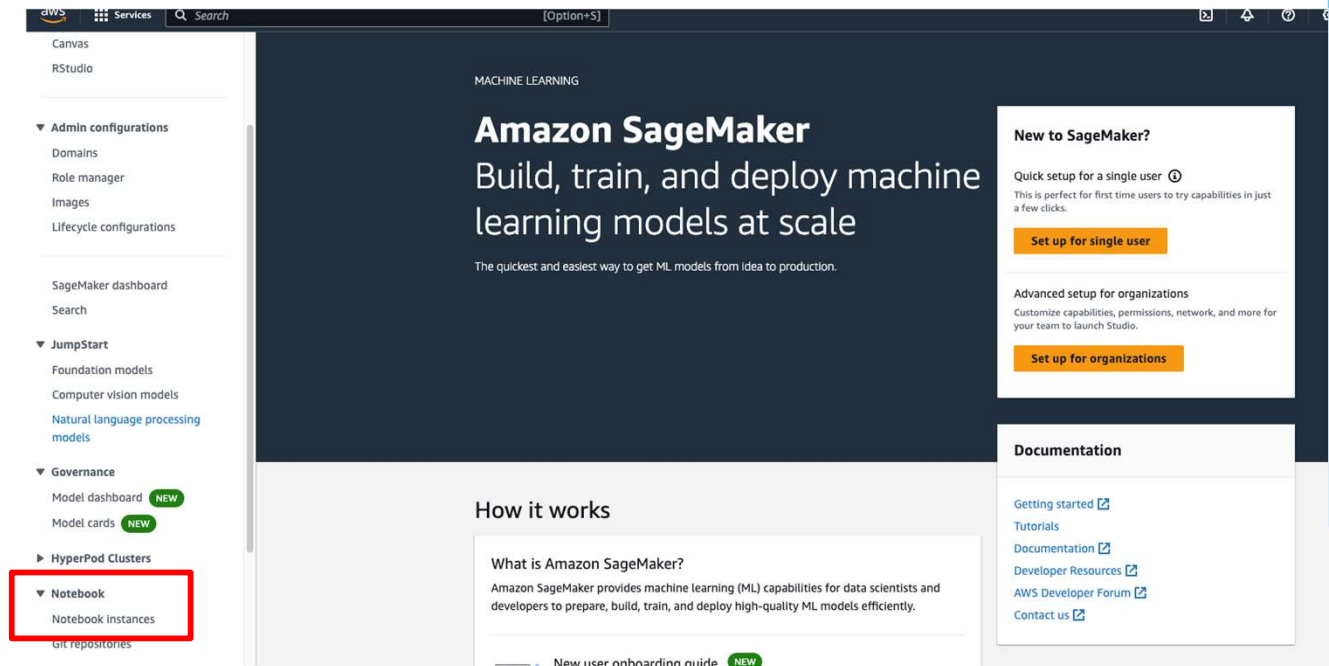
- Log in
- Search “SageMaker



Login and run the code

Go to AWS

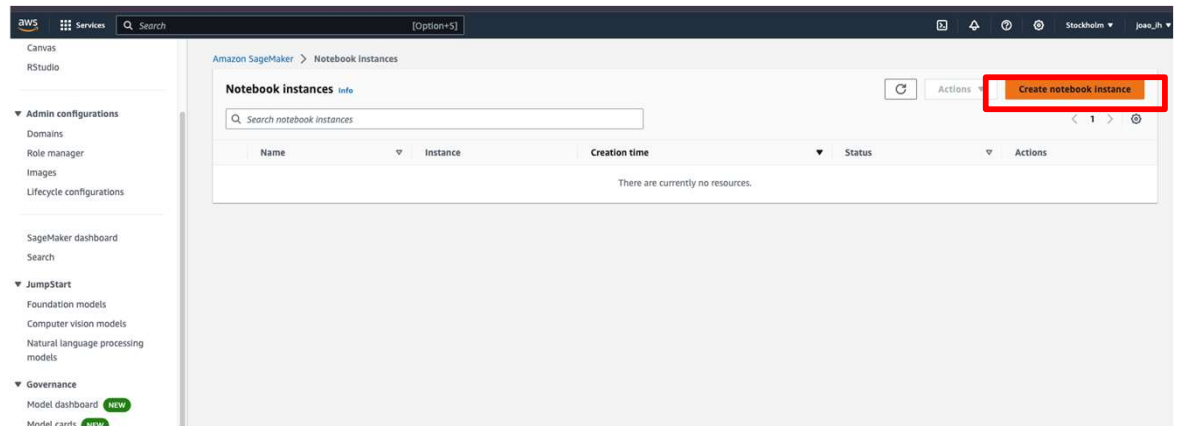
- Log in
- Search “SageMaker”
- Go to Notebook instances



Login and run the code

Go to AWS

- Log in
- Search “SageMaker
- Go to Notebook instances
- Create notebook instance

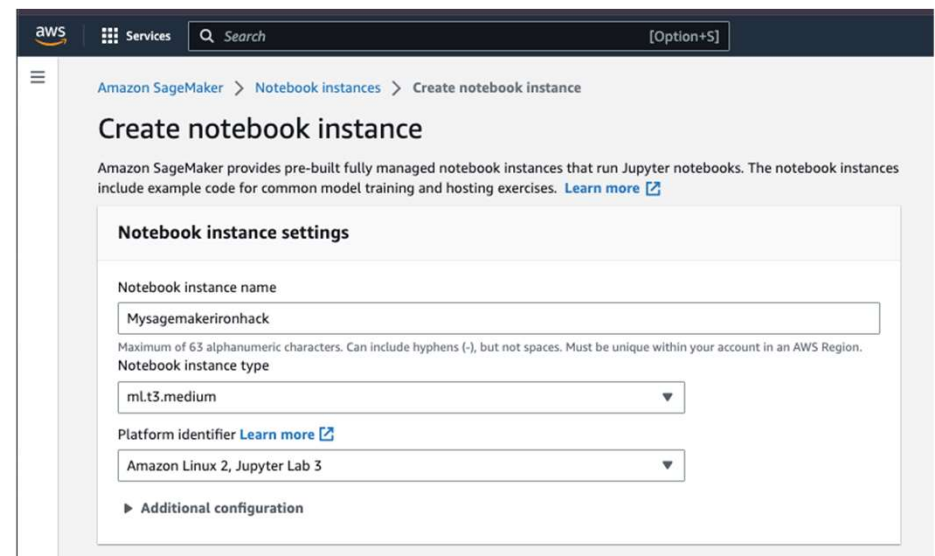


IMPORTANT – THIS COSTS MONEY (5cents/h, when the instance is on)
IronHack cannot be responsible for what students do in their AWS accounts
(See last slide: you have 250h/month free in the beginning)

Login and run the code

Go to AWS

- Log in
- Search “SageMaker
- Go to Notebook instances
- Create notebook instance
- Give it a name;

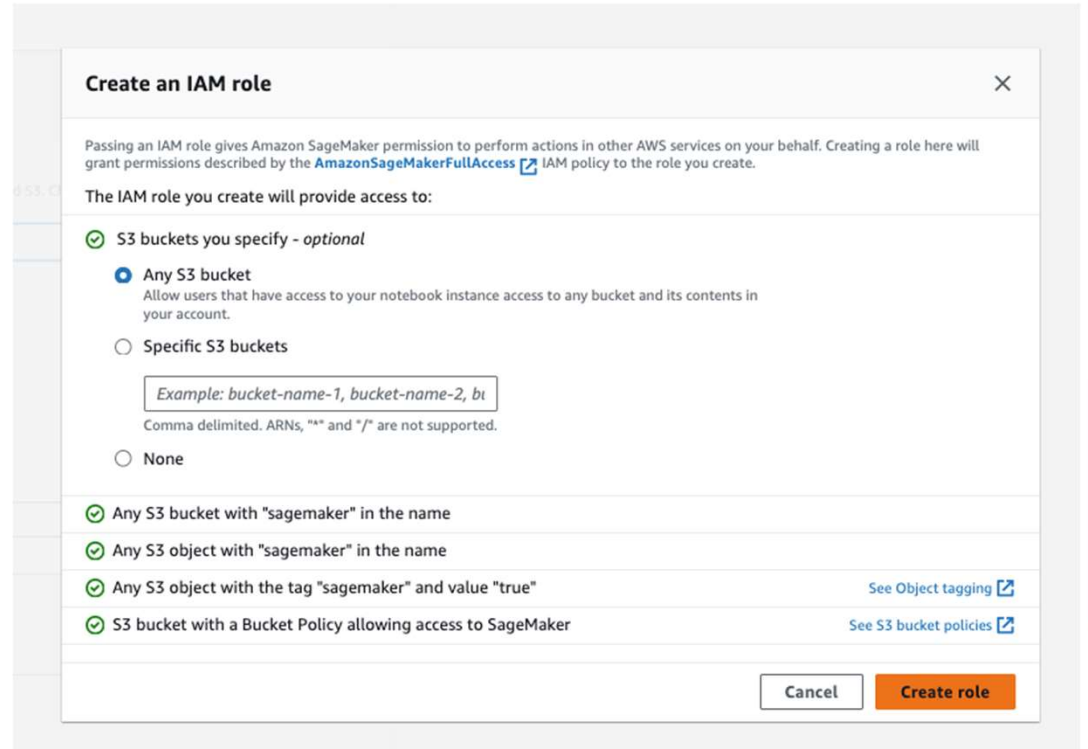


The screenshot shows the AWS SageMaker console interface for creating a new notebook instance. The breadcrumb navigation at the top reads 'Amazon SageMaker > Notebook instances > Create notebook instance'. The main heading is 'Create notebook instance', followed by a descriptive paragraph: 'Amazon SageMaker provides pre-built fully managed notebook instances that run Jupyter notebooks. The notebook instances include example code for common model training and hosting exercises. [Learn more](#)'. Below this is a section titled 'Notebook instance settings' which contains three main configuration fields: 'Notebook instance name' with a text input containing 'Mysagemakerironhack' and a note about character limits; 'Notebook instance type' with a dropdown menu showing 'ml.t3.medium'; and 'Platform identifier' with a dropdown menu showing 'Amazon Linux 2, Jupyter Lab 3'. A link for 'Platform identifier' points to 'Learn more'. At the bottom of the settings section is a link to 'Additional configuration'.

Login and run the code

Go to AWS

- Log in
- Search “SageMaker
- Go to Notebook instances
- Create notebook instance
- Give it a name
- (First time) create na IAM role
- All other defaults are ok



Create an IAM role ✕

Passing an IAM role gives Amazon SageMaker permission to perform actions in other AWS services on your behalf. Creating a role here will grant permissions described by the [AmazonSageMakerFullAccess](#) IAM policy to the role you create.

The IAM role you create will provide access to:

- ☒ **S3 buckets you specify - optional**
 - ☒ **Any S3 bucket**
Allow users that have access to your notebook instance access to any bucket and its contents in your account.
 - ☐ **Specific S3 buckets**

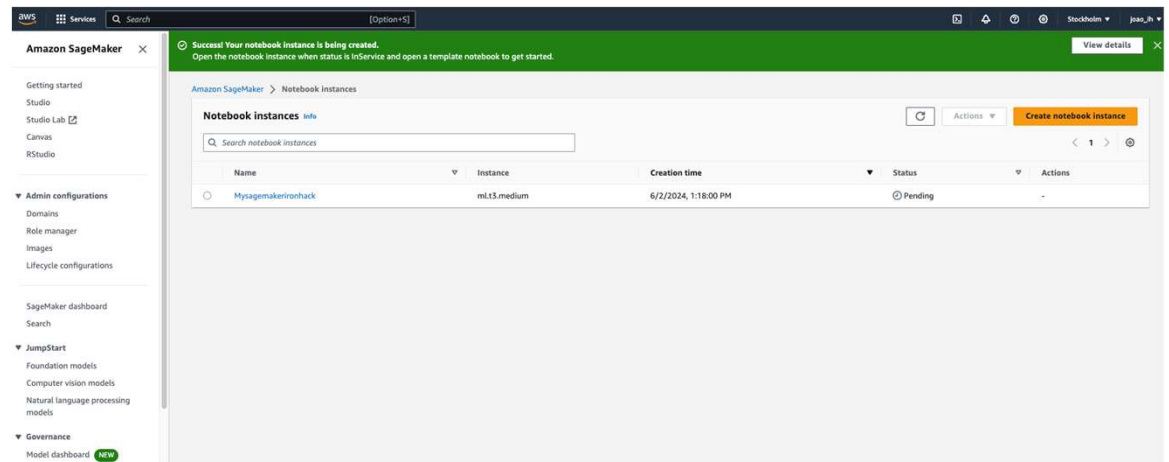
Example: `bucket-name-1, bucket-name-2, bi`
Comma delimited. ARNs, `**` and `*` are not supported.
 - ☐ **None**
- ☒ Any S3 bucket with "sagemaker" in the name
- ☒ Any S3 object with "sagemaker" in the name
- ☒ Any S3 object with the tag "sagemaker" and value "true" [See Object tagging](#)
- ☒ S3 bucket with a Bucket Policy allowing access to SageMaker [See S3 bucket policies](#)

Cancel Create role

Login and run the code

Go to AWS

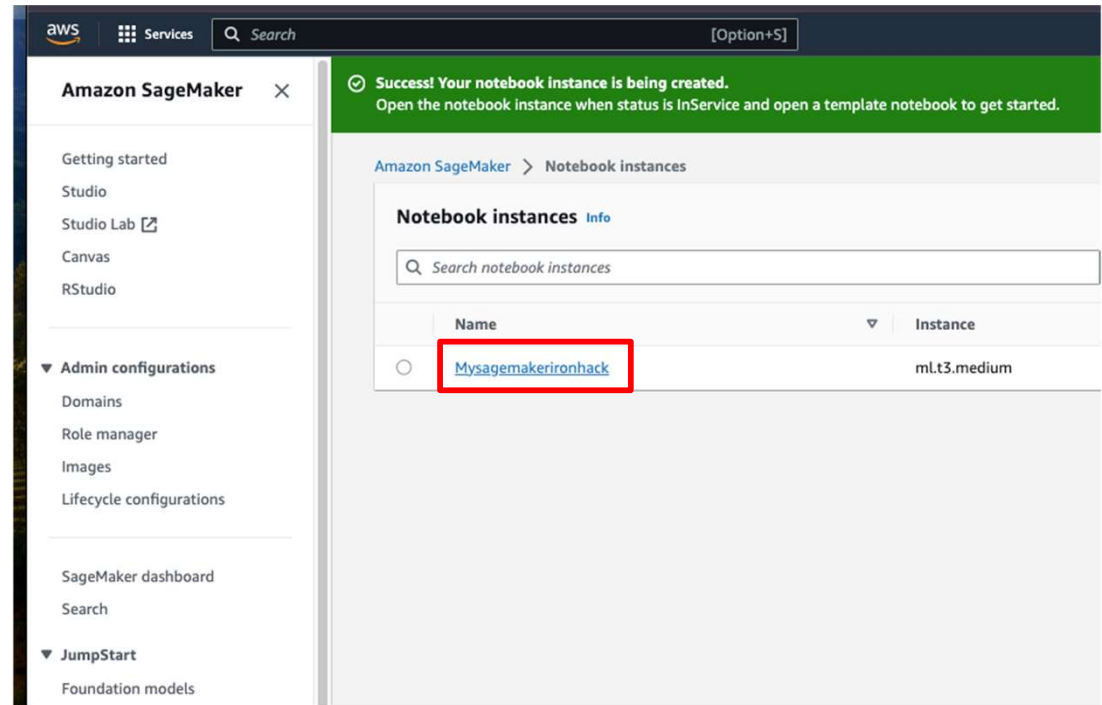
- Log in
- Search “SageMaker
- Go to Notebook instances
- Create notebook instance
- Give it a name
- (First time) create na IAM role
- All other defaults are ok
- SageMaker created!



Login and run the code

Go to AWS

- Log in
- Search “SageMaker
- Go to Notebook instances
- Create notebook instance
- Give it a name
- (First time) create na IAM role
- All other defaults are ok
- SageMaker created!
- Click the name to go in (it will take a few minutes)



Login and run the code

Go to AWS

- Log in
- Search "SageMaker"
- Go to Notebook instances
- Create notebook instance
- Give it a name
- (First time) create an IAM role
- All other defaults are ok
- SageMaker created!
- Click the name to go in
- Click Open Jupyter Lab

The screenshot shows the Amazon SageMaker console interface. On the left is a navigation sidebar with options like 'Getting started', 'Studio', 'Canvas', 'RStudio', 'Admin configurations', 'JumpStart', 'Governance', 'HyperPod Clusters', 'Notebook', 'Processing', 'Training', and 'Inference'. The main panel displays the details for a notebook instance named 'Mysagemakerironhack'. At the top right of this panel, there are buttons for 'Delete', 'Stop', 'Open Jupyter', and 'Open JupyterLab', with the last one being highlighted by a red rectangle. Below the buttons, the 'Notebook instance settings' section shows a table with instance details: Name (Mysagemakerironhack), Status (InService), Notebook instance type (ml.t3.medium), Platform identifier (Amazon Linux 2, Jupyter Lab 3), ARN, Creation time, Volume Size (5GB EBS), Last updated, and Lifecycle configuration. Further down, the 'Git repositories' section shows a table with columns for Name, Repository URL, and Type, with a message stating 'There are currently no resources.' The 'Permissions and encryption' section shows the IAM role ARN, Root access (Enabled), and Encryption key. The 'Network' section is partially visible at the bottom.

Notebook instance settings			
Name	Status	Notebook instance type	Platform identifier
Mysagemakerironhack	InService	ml.t3.medium	Amazon Linux 2, Jupyter Lab 3 (notebook-ai2-v2)
ARN	Creation time	Volume Size	Minimum IMDS Version
arn:aws:sagemaker:eu-north-1:851725197697:notebook-instance/Mysagemakerironhack	Jun 02, 2024 12:18 UTC	5GB EBS	2
Lifecycle configuration	Last updated		
-	Jun 02, 2024 12:21 UTC		

Git repositories		
Name	Repository URL	Type
There are currently no resources.		

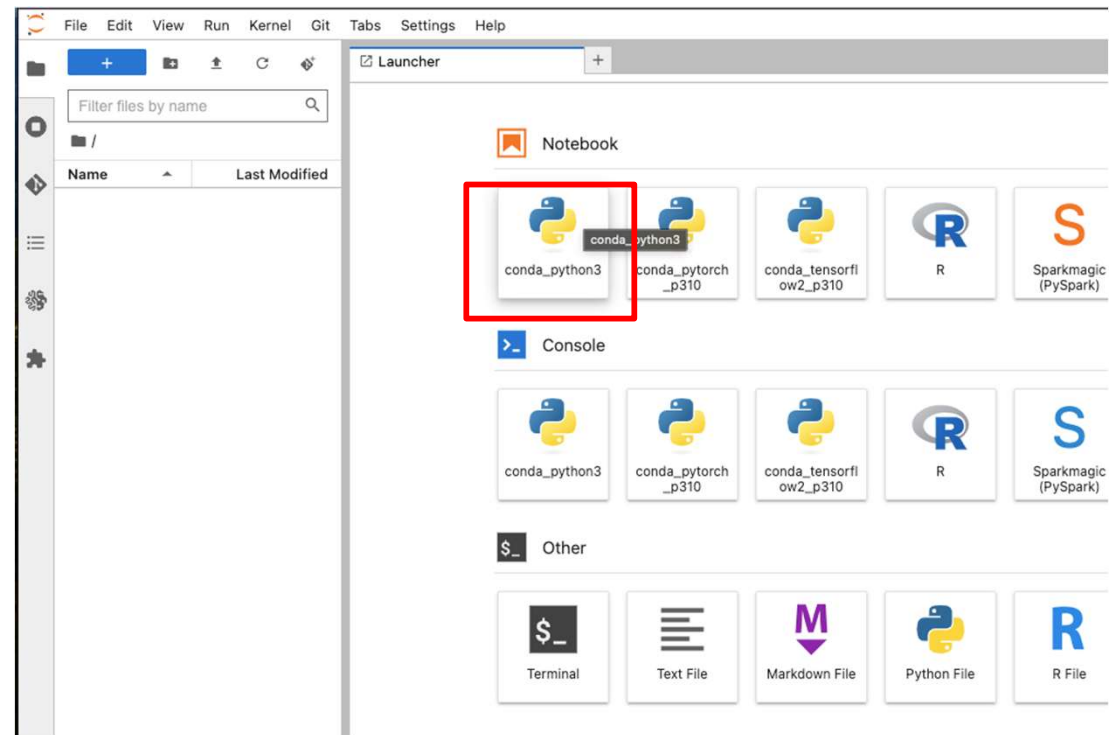
Permissions and encryption		
IAM role ARN	Root access	Encryption key
arn:aws:iam::851725197697:role/service-role/AmazonSageMaker-ExecutionRole-202406021131667	Enabled	

Network

Login and run the code

Go to AWS

- Log in
- Search "SageMaker"
- Go to Notebook instances
- Create notebook instance
- Give it a name
- (First time) create an IAM role
- All other defaults are ok
- SageMaker created!
- Click the name to go in
- Click Open Jupyter Lab
- Click Conda Python3

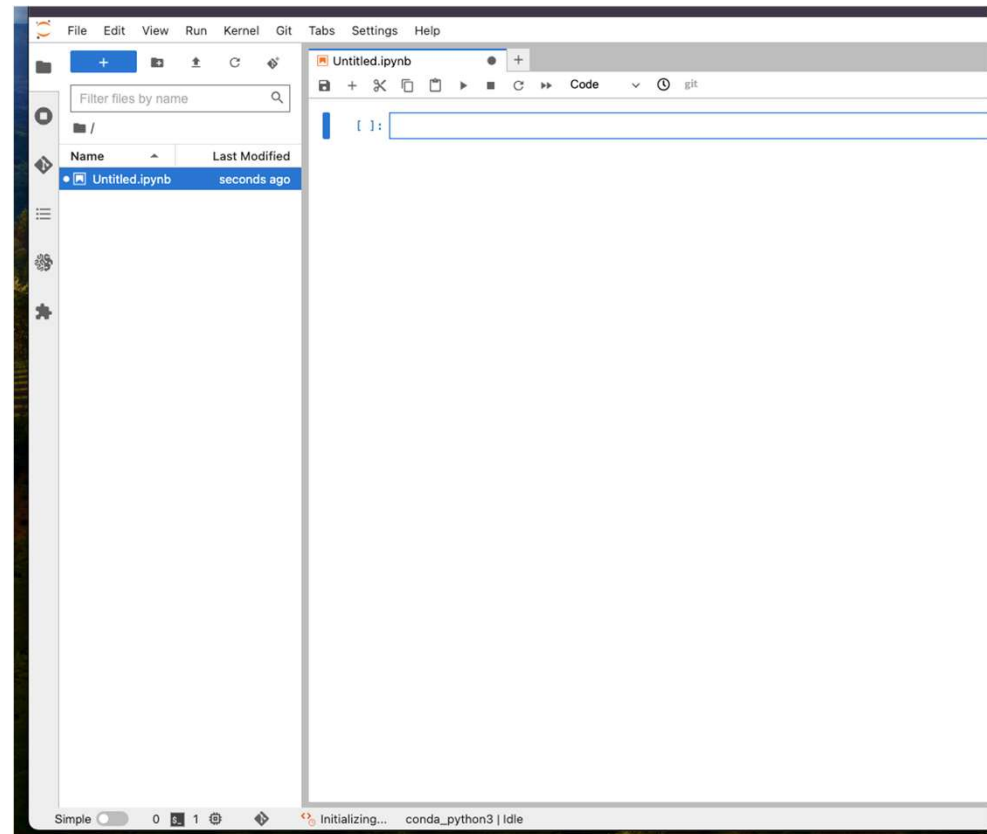


Login and run the code

Go to AWS

- And you are in a jupyter notebook as you know it. You can run terminal commands by running `!pip install` as well as upload documents and data to your Notebook (via the upload button)

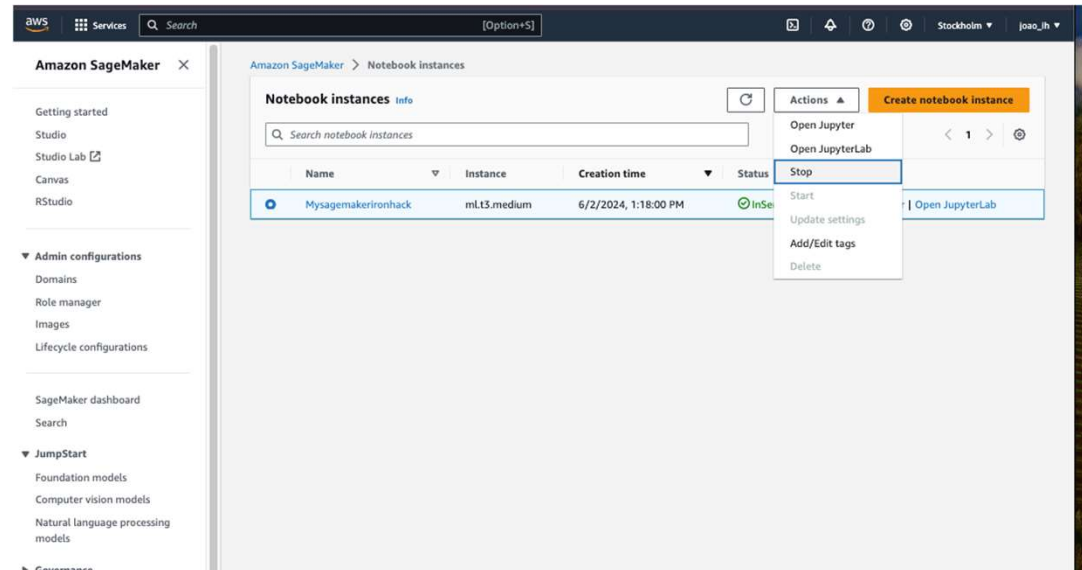
Be carefull with package instalation envs and directories in general



IMPORTANT

YOU HAVE TO STOP YOUR SAGEMAKER!!!!

IT costs 5cents/h which is nothing to run code,
but does pile up if you leave it active for 3 months!!!






IMPORTANT






Stopped it looks like this

If you prefer, delete the instance

Amazon SageMaker > Notebook instances

Notebook instances [Info](#)  **Actions**  [Create notebook instance](#)

< 1 > 

	Name 	Instance	Creation time 	Status 	Actions
	Mysagemakerironhack	mL.t3.medium	6/2/2024, 1:18:00 PM	 Stopped	Start

IMPORTANT

Amazon FreeTier:

- For 2 months (more than enough to finish the course)

You will have available some hours per month as well as you can apply to 300\$ of AWS credits here:

<https://aws-experience.com/amer/smb/exclusive-offers/aws-credits>

NOTE: This is always changing please confirm

The image shows a screenshot of the Amazon SageMaker Free Tier page. The page is titled "MACHINE LEARNING" with a "NEW" badge. It features a "Free Tier" section with a "FREE TRIAL" label. The main heading is "Amazon SageMaker 2 Months free trial". Below this, it states "Machine learning for every data scientist and developer." and lists the following benefits:

- 250 hours per month of ml.t3.medium on Studio notebooks OR 250 hours per month of ml.t2.medium or ml.t3.medium on on-demand notebook instances
- 25 hours per month on ml.m5.4xlarge on SageMaker Data Wrangler
- 10M write units, 10 M, r storage per month on S3
- 50 hours per month of m instances on Training
- 125 hours of m4.xlarge or m5.xlarge instance per month on Inference

Overlaid on the bottom right is a dark blue banner for the "aws connected community". It includes the text "Home > Software and service offers" and a large heading "Apply for \$300 AWS Credits". Below this, it says: "Connected Community members can apply to receive \$300 in AWS credits to help launch projects on Amazon Services. Trial and test how AWS services can support your IT and business needs."

Exercises

Exercise 1):

- Get your code to run in AWS

Exercise 2)

- Get your code to Run on Google Colab (MUCH EASIER)

Bonus Exercise (if you feel like a techy guy)

- Create the similar thing as SageMaker but in Google Cloud Platform's Vertex AI

<https://cloud.google.com/vertex-ai/docs/workbench/instances/introduction>



Good luck

Let's get started!