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Language

English ▼

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Lab 11. SageMaker Notebook Instances

In this workshop we will cover the following topics:

- Overview
  - JupyterLab Versioning
- Create Notebook Instances with JupyterLab 3
  - Steps to create a notebook instance
- Next Steps

Overview

An Amazon SageMaker notebook instance ⧉ is a machine learning (ML) compute instance running the Jupyter Notebook App. SageMaker manages creating the instance and related resources. Use Jupyter notebooks in your notebook instance to prepare and process data, write code to train models, deploy models to SageMaker hosting, and test or validate your models.

SageMaker also provides sample notebooks that contain complete code walkthroughs. These walkthroughs show how to use SageMaker to perform common machine learning tasks. For more information, see Example Notebooks ⧉.

JupyterLab Versioning

The Amazon SageMaker notebook instance interface is based on JupyterLab, which is a web-based interactive development environment for notebooks, code, and data. Notebooks now support using either JupyterLab 1 or JupyterLab 3. A single notebook instance can run a single instance of JupyterLab (at most). You can have multiple notebook instances with different JupyterLab versions.

You can configure your notebook to run your preferred JupyterLab version by selecting the appropriate platform identifier. Use either the AWS CLI or the SageMaker console when creating your notebook instance. For more information about platform identifiers, see Amazon Linux 2 vs Amazon Linux notebook instances ⧉. If you don't explicitly configure a platform identifier, your notebook instance defaults to running JupyterLab 1.

In this lab we will cover following:

1. Create a SageMaker Notebook Instance with Jupyter lab 3

3. Conifgure auto complete plugin

Create Notebook Instances with JupyterLab 3

To create a notebook instance, use either the SageMaker console or the CreateNotebookInstance API ↗.

The notebook instance type you choose depends on how you use your notebook instance. You want to ensure that your notebook instance is not bound by memory, CPU, or IO. If you plan to load a dataset into memory on the notebook instance for exploration or preprocessing, we recommend that you choose an instance type with enough RAM memory for your dataset. This would require an instance with at least 16 GB of memory (.xlarge or larger). If you plan to use the notebook for compute intensive preprocessing, we recommend you choose a compute-optimized instance such as a c4 or c5.

A best practice when using a SageMaker notebook is to use the notebook instance to orchestrate other AWS services. For example, you can use the notebook instance to manage large dataset processing by making calls to AWS Glue for ETL (extract, transform, and load) services or Amazon EMR for mapping and data reduction using Hadoop. You can use AWS services as temporary forms of computation or storage for your data.

You can store and retrieve your training and test data using an Amazon S3 bucket. You can then use SageMaker to train and build your model, so the instance type of your notebook would have no bearing on the speed of your model training and testing.

Steps to create a notebook instance

Step 1: Open the SageMaker console at https://console.aws.amazon.com/sagemaker/notebook-instances ↗.

Step 2: Choose `Notebook instances` from left navigation, then choose `Create notebook instance`.

Amazon SageMaker > Notebook instances
Notebook instances   ⟳   Actions ▼   **Create notebook instance**
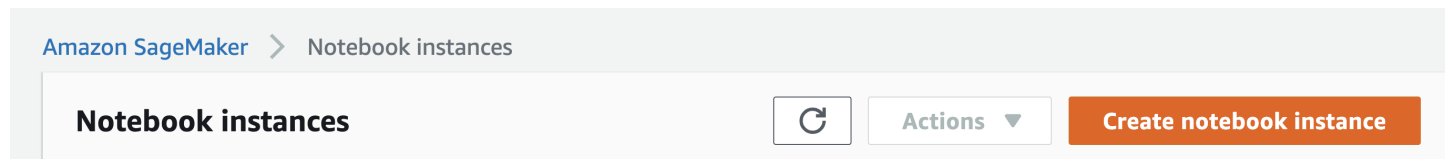
Step 3: On the `Create notebook instance page`, provide the following information:

- For `Notebook instance name`, type a name for your notebook instance.
- For `Notebook instance type`, choose an `ml.t3.medium`.
- For `Platform Identifier`, choose a platform type as `Amazon Linux 2, Jupyter Lab 3`. This platform type dictates the Operating System and the JupyterLab version that your notebook instance is created with.

Platform identifier **Learn more** ⬀

Amazon Linux 2, Jupyter Lab 3 ▲

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Amazon Linux 1, Jupyter Lab 1
notebook-al1-v1

Amazon Linux 2, Jupyter Lab 1
notebook-al2-v1

Amazon Linux 2, Jupyter Lab 3
notebook-al2-v2

Amazon Linux 2, Jupyter Lab 3

- For `Volume size in GB` enter 20 GB.
- For `IAM role`, choose `Create a new role`. If you choose Create a new role, SageMaker creates an IAM role named AmazonSageMaker-ExecutionRole-YYYYMMDDTHHmmSS. The AWS managed policy AmazonSageMakerFullAccess is attached to the role. The role provides permissions that allow the notebook instance to call SageMaker and Amazon S3.
- Leave all the other fields as is.
- Choose `Create notebook instance`. In a few minutes, Amazon SageMaker launches an ML compute instance—in this case, a notebook instance—and attaches an ML storage volume to it. The notebook instance has a preconfigured Jupyter notebook server and a set of Anaconda libraries.

Step 4: When the status of the notebook instance is InService, in the console, the notebook instance is ready to use. Choose Open Jupyter next to the notebook name to open the classic Jupyter dashboard. Choose `Open JupyterLab` to open the JupyterLab dashboard.

Amazon SageMaker > Notebook instances

Notebook instances

Search notebook instances

	Name	Instance	Creation time	Status	Actions
○	demo-jupyter-lab3	ml.t3.medium	Aug 24, 2022 16:20 UTC	⊘ InService	Open Jupyter | Open JupyterLab

Once open the JupyterLab dashaboard should like the screenshot below:
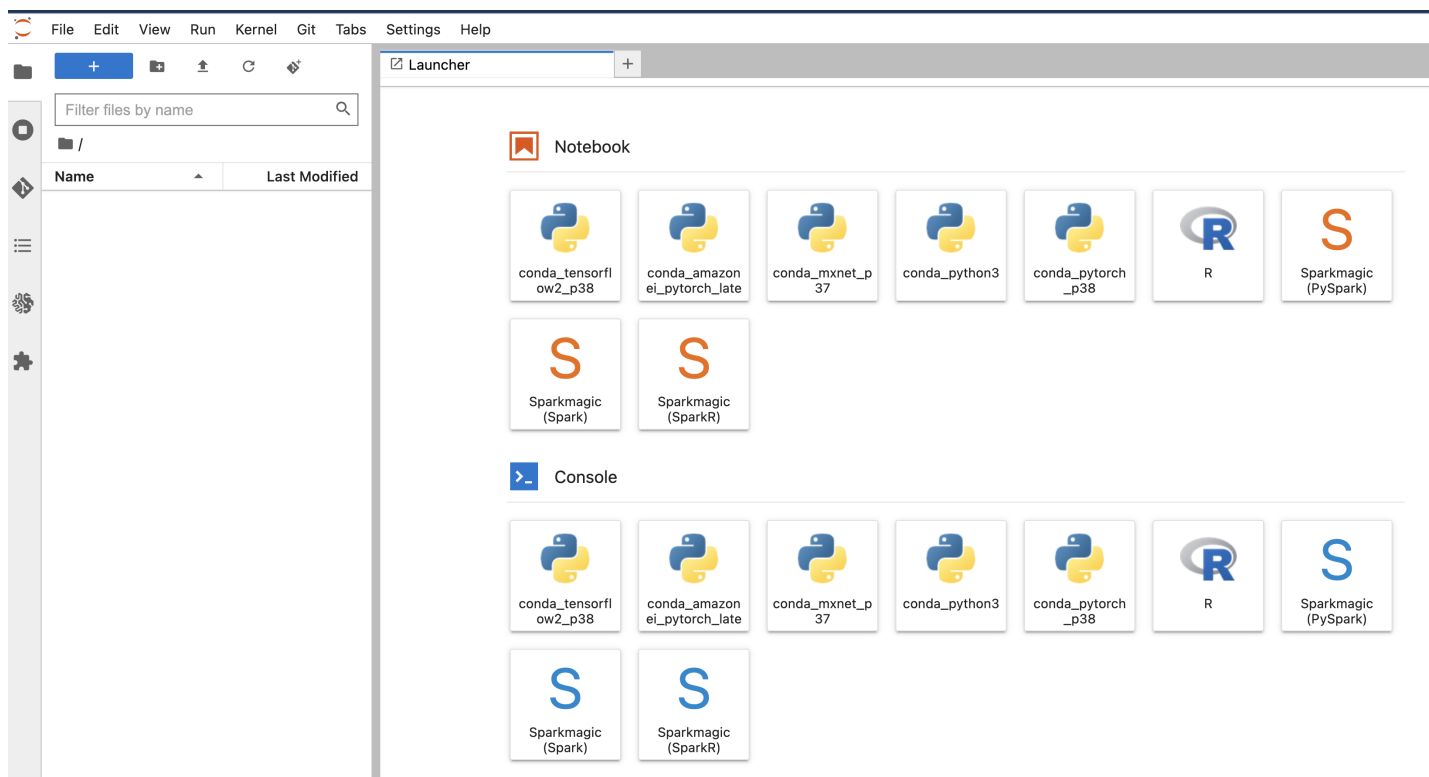
Congratulations you have successfully created SageMaker Notebook Instance with JupyterLab 3. With Jupyter Lab 3, now you have access to several features out of the box that improve the SageMaker developer experience, including the following:

- An integrated debugger with support for breakpoints and variable inspection
- A table of contents panel to more easily navigate notebooks

- A filter bar for the file browser
- Support for multiple display languages
- The ability to install extensions through pip, Conda, and Mamba

With the integrated debugger ⧉, you can inspect variables and step through breakpoints while you interactively build your data science and ML code. You can access the debugger by simply choosing the debugger icon on the notebook toolbar.
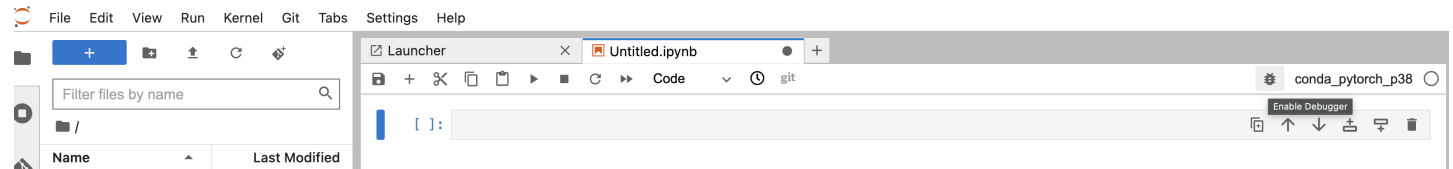
The debugger is available for `amazonei_pytorch_latest_p37`, `pytorch_p38`, and `tensorflow2_p38` kernels in SageMaker Notebook Instance, with plans to support more in the near future.

Next Steps

Once, the notebook instance has been created you can choose to start with `Notebook Instances Jupyter Lab Extensions lab` or `Notebook Instances - Model Registry & Experiments`.

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