

Compute Resources

Explore experiments and runs

In the previous lab (19), you executed a Jupyter notebook that trained a model through a series of 10 different runs, each with a different alpha hyperparameter applied. These runs were created within the experiment you created at the beginning of the notebook. Because of this, Azure Machine Learning logged the details so you can review the result of each run and see how the alpha value is different between the them.

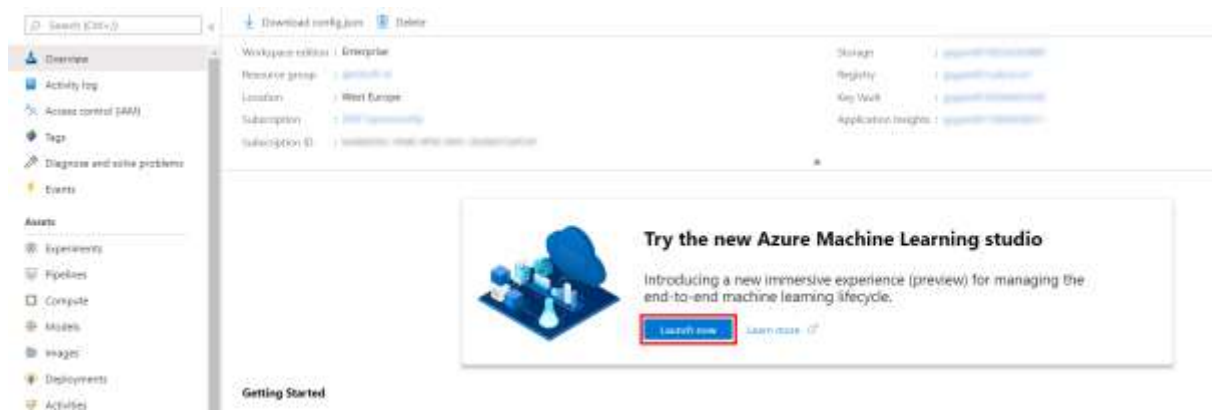
Overview

In this lab, you view the experiments and runs executed by a notebook. In the first part of the lab, you will use a notebook to create and run the experiments. In the second part of the lab, you will navigate to the **Experiments** blade in Azure Machine Learning Studio. Here you see all the individual runs in the experiment. Any custom-logged values (alpha_value and rmse, in this case) become fields for each run, and also become available for the charts and tiles at the top of the experiment page. To add a logged metric to a chart or tile, hover over it, click the edit button, and find your custom-logged metric.

When training models at scale over hundreds and thousands of separate runs, this page makes it easy to see every model you trained, specifically how they were trained, and how your unique metrics have changed over time.

Exercise 1: Run the Notebook for this Lab

1. In [Azure portal](#), open the available machine learning workspace.
2. Select **Launch now** under the **Try the new Azure Machine Learning studio** message.



- When you first launch the studio, you may need to set the directory and subscription. If so, you will see this screen:

Welcome to the studio!

Select a subscription and a workspace to get started or go to the [Azure Portal](#) to create your subscription and workspace. You can switch subscriptions and workspaces at any time. [Learn more.](#)

Switch directory

Udacity

Subscription

Azure Sponsorship - Udacity -04

Machine learning workspace

quick-starts-ws-190124

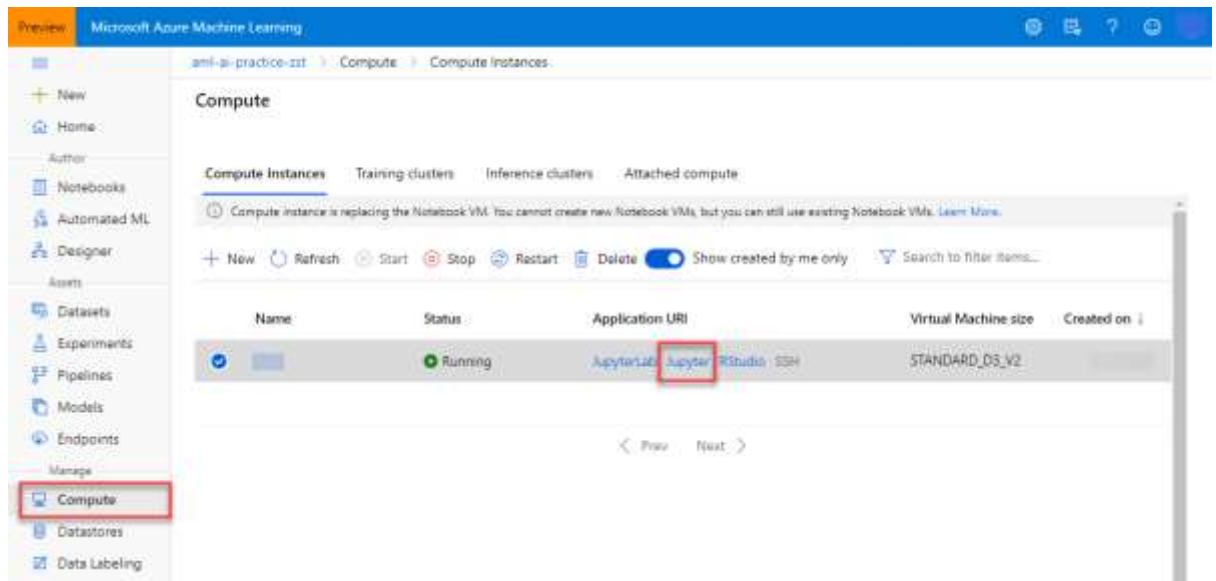
quick-starts-ws-190124 southcentralus

aml-quickstarts-190124

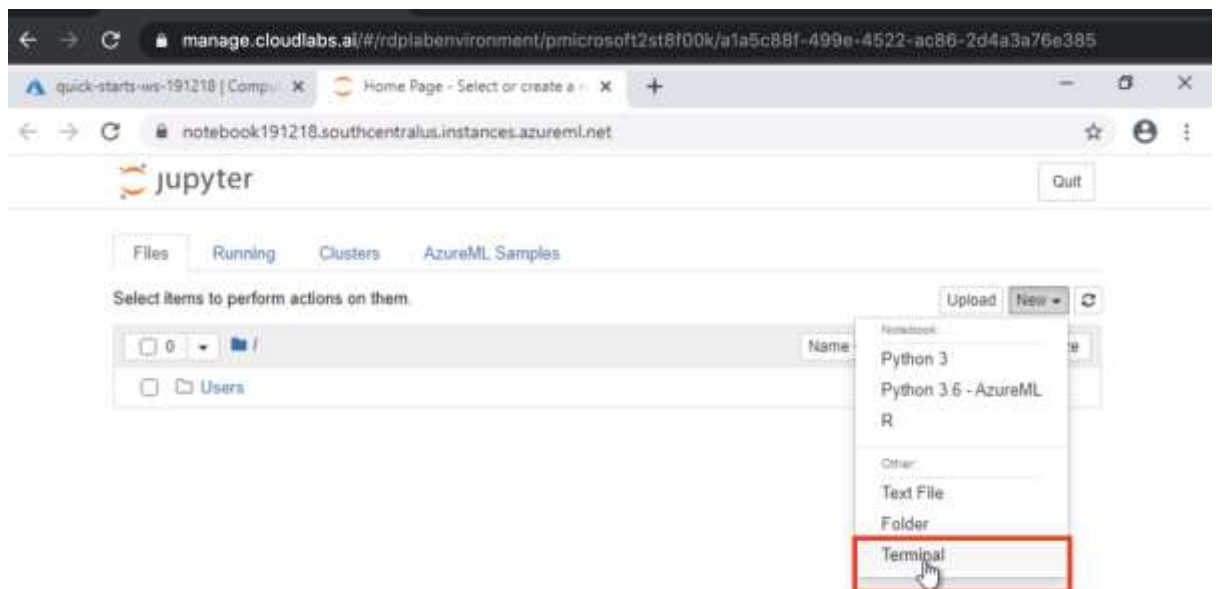
Get started

For the directory, select **Udacity** and for the subscription, select **Azure Sponsorship**. For the machine learning workspace, you may see multiple options listed. **Select any of these** (it doesn't matter which) and then click **Get started**.

- From the studio, navigate to **Compute**. Next, for the available Compute Instance, under Application URI select **Jupyter**. Be sure to select **Jupyter** and not **JupyterLab**.

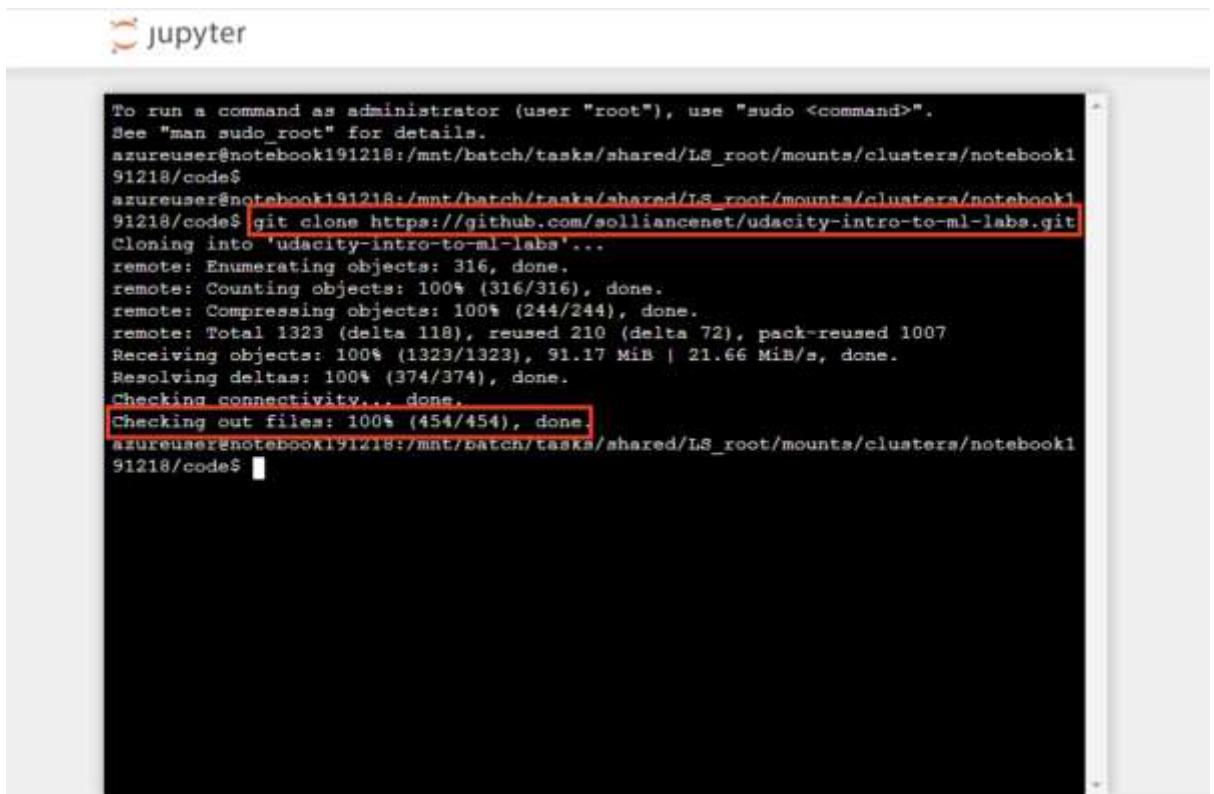


- From within the Jupyter interface, select **New, Terminal**.



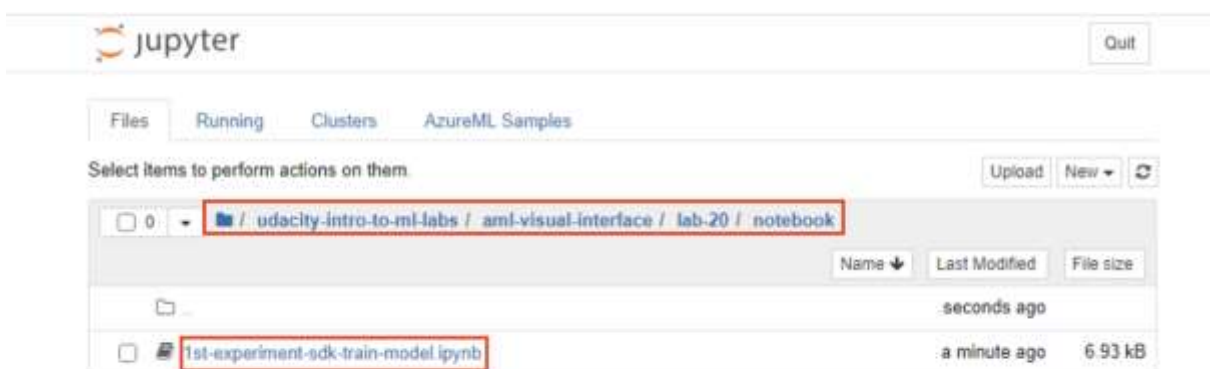
- In the new terminal window run the following command and wait for it to finish:

```
git clone https://github.com/solliancenet/udacity-intro-to-ml-labs.git
```



A screenshot of a Jupyter terminal window. The terminal shows the execution of the command `git clone https://github.com/solliancenet/udacity-intro-to-ml-labs.git`. The output indicates that the repository was successfully cloned into the directory `udacity-intro-to-ml-labs`. The terminal text includes: "To run a command as administrator (user "root"), use "sudo <command>". See "man sudo_root" for details.", "azureuser@notebook191218:/mnt/batch/tasks/shared/LS_root/mounts/clusters/notebook191218/code\$ git clone https://github.com/solliancenet/udacity-intro-to-ml-labs.git", "Cloning into 'udacity-intro-to-ml-labs'...", "remote: Enumerating objects: 316, done.", "remote: Counting objects: 100% (316/316), done.", "remote: Compressing objects: 100% (244/244), done.", "remote: Total 1323 (delta 118), reused 210 (delta 72), pack-reused 1007", "Receiving objects: 100% (1323/1323), 91.17 MiB | 21.66 MiB/s, done.", "Resolving deltas: 100% (374/374), done.", "Checking connectivity... done.", "Checking out files: 100% (454/454), done.", "azureuser@notebook191218:/mnt/batch/tasks/shared/LS_root/mounts/clusters/notebook191218/code\$".

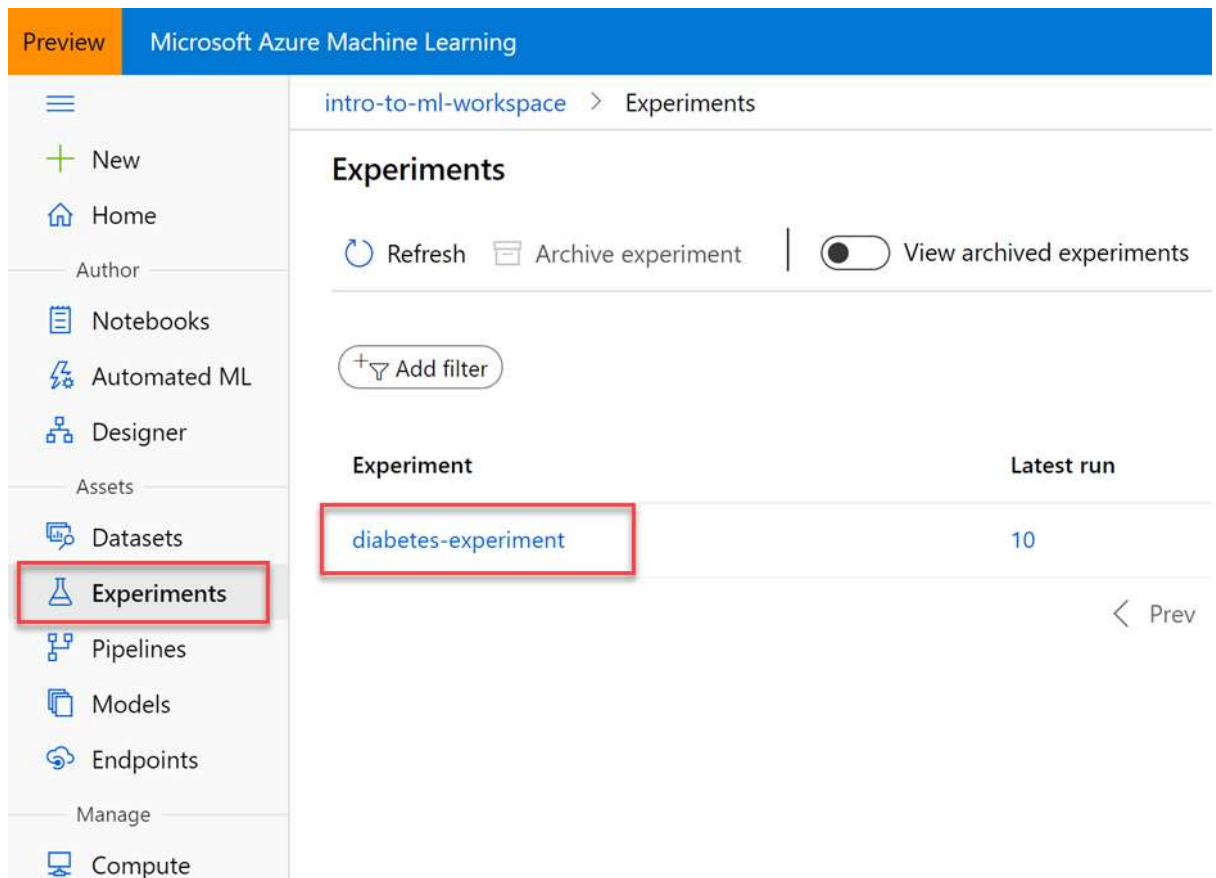
- From within the Jupyter interface, navigate to directory `udacity-intro-to-ml-labs/aml-visual-interface/lab-20/notebook` and open `1st-experiment-sdk-train-model.ipynb`. This is the Python notebook you will step through executing in this lab.



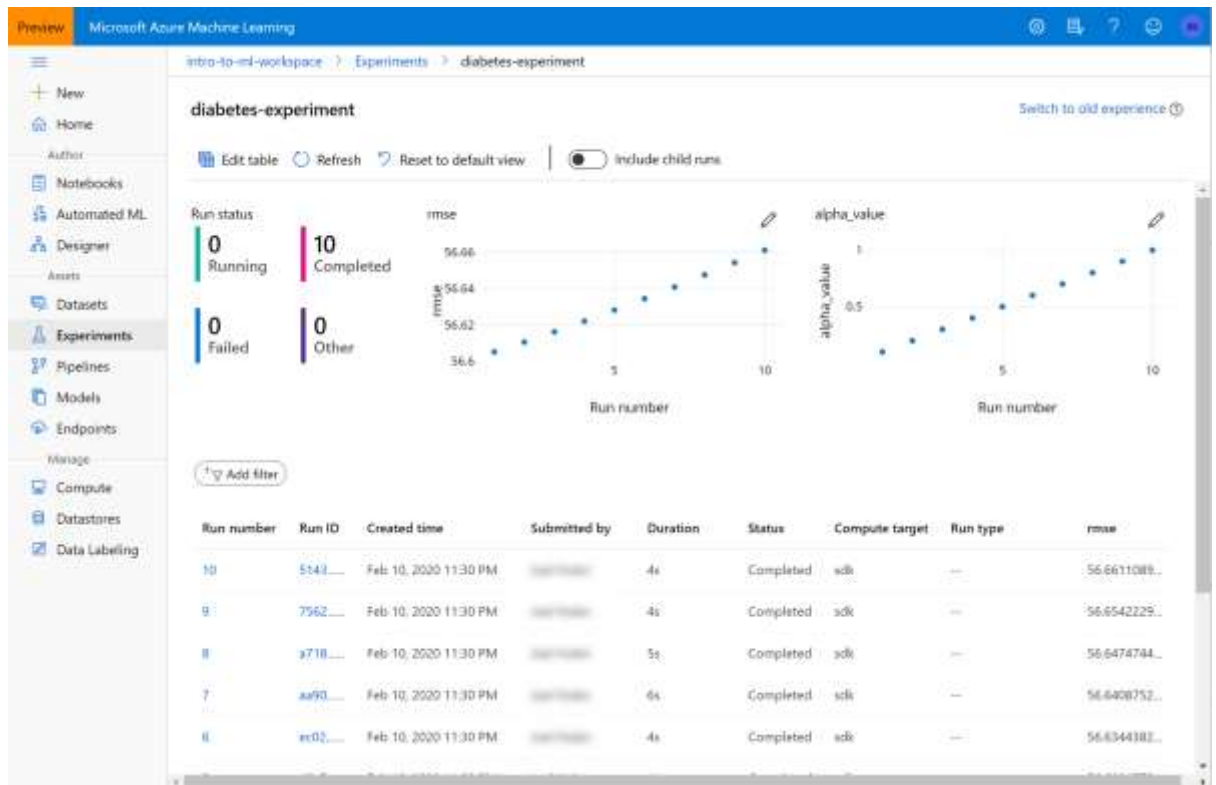
- Follow the instructions within the notebook to complete the exercise.

Exercise 2: Open Experiments in the portal

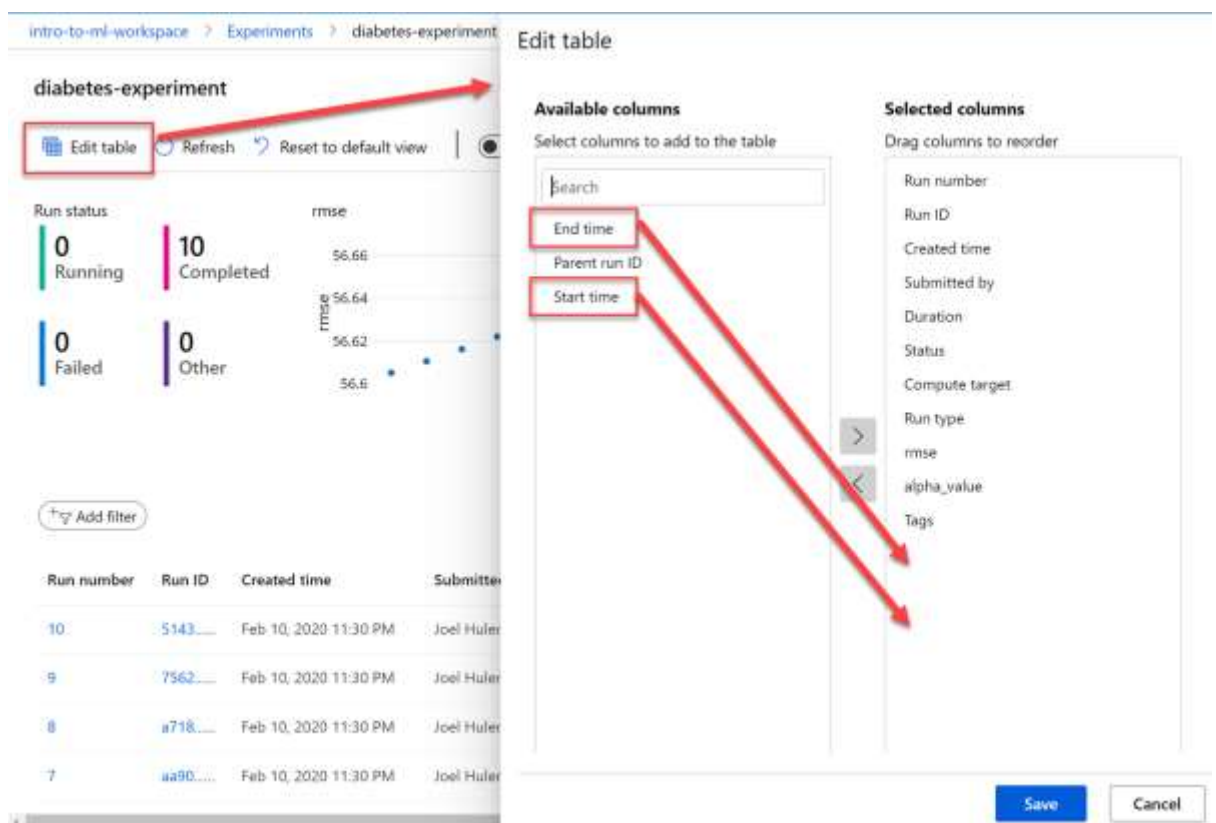
1. Within Azure Machine Learning Studio, select **Experiments** in the left-hand menu, then select the **diabetes-experiment** submitted by the notebook you executed in the previous lab (19).



2. Here you can view details about the experiment and each of its runs, which created a new version of the model.



3. Select **Edit table** in the top toolbar. In the Edit table dialog that appears, add the **End time** and **Start time** columns to the Selected columns list, then select **Save**.



Depending on your screen resolution, you might need to scroll down the table to see the bottom horizontal scrollbar. When you scroll all the way to the right, you will see the new columns you added.

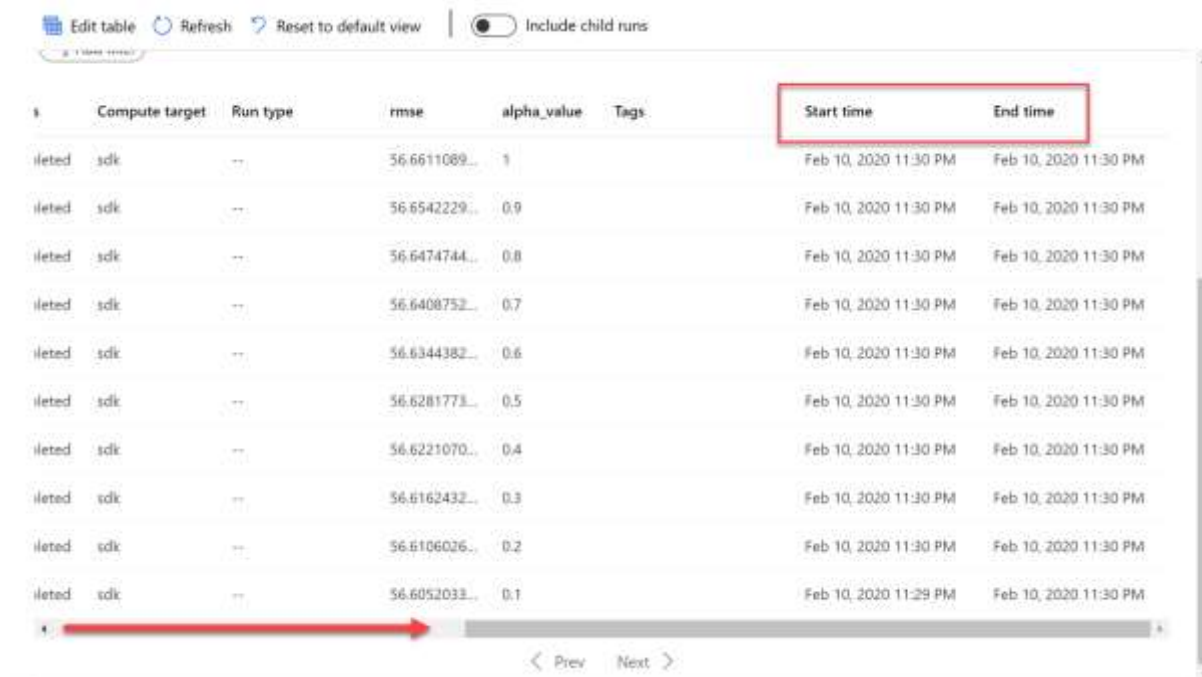


Table interface showing columns: \$, Compute target, Run type, rmse, alpha_value, Tags, Start time, End time. The table contains 10 rows of data. A red arrow points to the right scrollbar at the bottom.

\$	Compute target	Run type	rmse	alpha_value	Tags	Start time	End time
ileted	sdkt	--	56.6611089...	1		Feb 10, 2020 11:30 PM	Feb 10, 2020 11:30 PM
ileted	sdkt	--	56.6542229...	0.9		Feb 10, 2020 11:30 PM	Feb 10, 2020 11:30 PM
ileted	sdkt	--	56.6474744...	0.8		Feb 10, 2020 11:30 PM	Feb 10, 2020 11:30 PM
ileted	sdkt	--	56.6408752...	0.7		Feb 10, 2020 11:30 PM	Feb 10, 2020 11:30 PM
ileted	sdkt	--	56.6344382...	0.6		Feb 10, 2020 11:30 PM	Feb 10, 2020 11:30 PM
ileted	sdkt	--	56.6281773...	0.5		Feb 10, 2020 11:30 PM	Feb 10, 2020 11:30 PM
ileted	sdkt	--	56.6221070...	0.4		Feb 10, 2020 11:30 PM	Feb 10, 2020 11:30 PM
ileted	sdkt	--	56.6162432...	0.3		Feb 10, 2020 11:30 PM	Feb 10, 2020 11:30 PM
ileted	sdkt	--	56.6106026...	0.2		Feb 10, 2020 11:30 PM	Feb 10, 2020 11:30 PM
ileted	sdkt	--	56.6052033...	0.1		Feb 10, 2020 11:29 PM	Feb 10, 2020 11:30 PM

- Select either the **Run number** or the **Run ID** of one of the runs to view its details. Both links on a run display the same dialog.

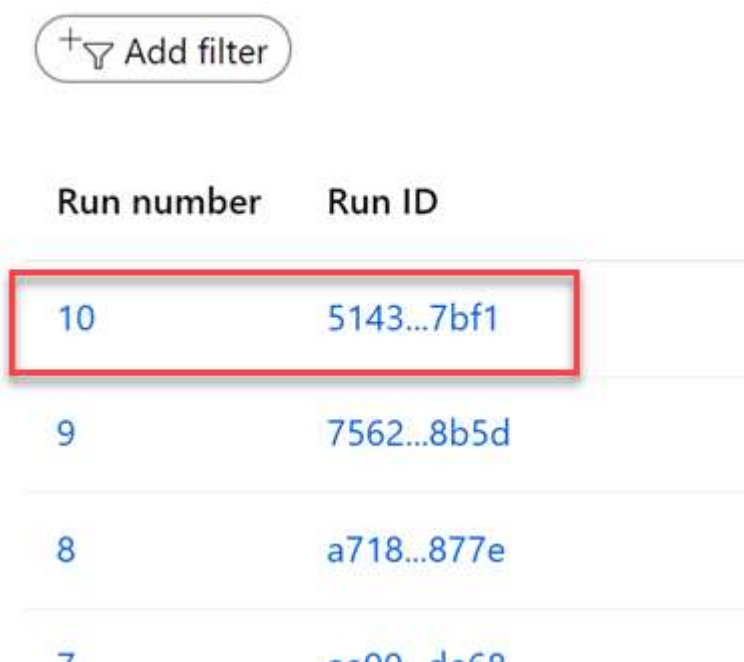


Table with columns: Run number, Run ID. The first row is highlighted with a red box.

Run number	Run ID
10	5143...7bf1
9	7562...8b5d
8	a718...877e
7	...

- The **Details** tab shows you more detailed information about each run, including the run time and metrics.

Run 10  Completed

 Refresh  Resubmit  Cancel

Details

Metrics

Images

Child runs

Outputs + logs

Snapshot

Raw JSON

Explanations (Preview)

Properties

Status
Completed

Created
Feb 10, 2020 11:30 PM

Duration
4.270s

Compute target
sdk

Run ID
51436fd3-92f8-40fb-bef2-839b99477bf1

Run number
10

Script name
--

Metrics

rmse
56.66110898499056

alpha_value
1

6. Select the **Outputs + logs** tab. You see the `.pkl` file for the model that was uploaded to the run during each training iteration. This lets you download the model file rather than having to retrain it manually.

Run 10  Completed

 Refresh  Resubmit  Cancel

Details


Metrics

Images

Child runs

Outputs + logs

Snapshot



 model_alpha_1.0.pkl

Next Steps

Congratulations! You have just learned how to use the Azure Machine Learning SDK to help you explain what influences the predictions a model makes. You can now return to the Udacity portal to continue with the lesson.