Prerequisites

- Python installed version 3.7 or later. For azureml-automl packages, use only version 3.7 or 3.8.
- pip installed

Default install

Use `azureml-core`.

Bash

```
pip install azureml-core
```

Then install any other packages required for your particular job.

Upgrade install

> **Tip**
>
> We recommend that you always keep azureml-core updated to the latest version.

Upgrade a previous version:

Bash

```
pip install --upgrade azureml-core
```

Check version

Verify your SDK version:

Bash

```
pip show azureml-core
```

To see all packages in your environment:

Bash

```
pip list
```

You can also show the SDK version in Python, but this version does not include the minor version.

Python

```
import azureml.core
print(azureml.core.VERSION)
```

To learn more about how to configure your development environment for Azure Machine Learning service, see Configure your development environment.

Other azureml packages

The SDK contains many other optional packages that you can install. These include dependencies that aren't required for all use-cases, so they are not included in the default installation in order to avoid bloating the environment. The following table outlines the packages ,their use-cases and command to install, update & version check.

Additional package	Use-case	Install/Upgrade/Show version

`azureml-automl-core`	Contains core automated machine learning classes for Azure Machine Learning. This package is used by azureml-train-automl-client	`pip install azureml-automl-core`
		`pip install --upgrade azureml-automl-core`
		`pip show azureml-automl-core`

Additional package	**Use-case**	**Install/Upgrade/Show version**
	and azureml-train-automl-runtime.	

`azureml-accel-models`	Accelerates deep neural networks on FPGAs with the Azure ML Hardware Accelerated Models Service.	`pip install azureml-accel-models`
		`pip install --upgrade azureml-accel-models`
		`pip show azureml-accel-models`

`azureml-train-automl`	Provides classes for building and running automated machine learning experiments. Also installs common data science packages including `pandas`, `numpy`, and `scikit-learn`.
	
	If you're looking to submit automated ML runs on a remote compute and don't need do any ML locally, we recommend using the **thin client**, `azureml-train-automl-client`, package that is part of the `azureml-sdk`.
	
	See the additional use-case guidance for more information on installation and working with the full `automl` SDK or its thin client, `azureml-train-automl-client`.
	
	Similar to the Python standard , one version backwards and one version forward compatibility is supported, but only for the full `azureml-train-automl` package. For example, if a model is trained with SDK version 1.29.0, then you can inference with SDK versions between 1.28.0 and 1.30.0.
		For local conda environment:
		`pip install azureml-train-automl`
		`pip install --upgrade azureml-train-automl pip install show azureml-train-automl`
		
		Thin client for remote compute:
		`pip install azureml-train-automl-client`
		`pip install --upgrade azureml-train-automl-client`
		`pip install show azureml-train-automl-client`

Additional package	Use-case	Install/Upgrade/Show version

`azureml-contrib`	Installs azureml-contrib-* packages, which include experimental functionality or preview features.	`pip install azureml-contrib`
		`pip install --upgrade azureml-contrib`
		`pip show azureml-contrib`

`azureml-datadrift`	Contains functionality to detect when model training	`pip install azureml-datadrift` `pip install --upgrade azureml-datadrift`

	detect when model training data has drifted from its scoring data.	`pip install --upgrade azureml-datadrift` `pip show azureml-datadrift`

`azureml-interpret`	Used for model interpretability, including feature and class importance for blackbox and whitebox models.	`pip azureml-interpret`
		`pip install --upgrade azureml-interpret`
		`pip show azureml-interpret`

`azureml-widgets`	Contains core packages, modules, and classes for Azure Machine Learning.	`pip install azureml-widgets`
		`pip install --upgrade azureml-widgets`
		`pip show azureml-widgets`

`azureml-contrib-services`	Provides functionality for scoring scripts to request raw HTTP access.	`pip install azureml-contrib-services`
		`pip install --upgrade azureml-contrib-services`
		`pip show azureml-contrib-services`

`azureml-tensorboard`	Provides classes and methods for exporting experiment run history and launching TensorBoard for visualizing experiment performance and structure.	`pip install azureml-tensorboard`
		`pip install --upgrade azureml-tensorboard`
		`pip show azureml-tensorboard`

`azureml-mlflow`	Contains functionality integrating Azure Machine Learning with MLFlow.	`pip install azureml-mlflow`
		`pip install --upgrade azureml-mlflow`
		`pip show azureml-mlflow`

`azureml-automl-runtime`	Contains automated machine learning classes for executing runs in Azure Machine Learning.	`pip install azureml-automl-runtime`
		`pip install --upgrade azureml-automl-runtime`
		`pip show azureml-automl-runtime`

`azureml-widgets`	Contains functionality to view the progress of machine	`pip install azureml-widgets`
		`pip install --upgrade azureml-widgets`
		`pip show azureml-widgets`

Additional package	**Use-case**	**Install/Upgrade/Show version**
	learning training runs in Jupyter Notebooks.	
`azureml-train-restclients-hyperdrive`	Contains classes needed to create HyperDriveRuns with azureml-train-core.	`pip install azureml-train-restclients-hyperdrive` `pip install --upgrade azureml-train-restclients-hyperdrive`

		`pip show azureml-train-restclients-hyperdrive`

`azureml-train-core`	Contains base estimator classes and the generic estimator class ,estimators used in Deep Neural Network (DNN) training ,estimators used in Scikit-Learn training, modules and classes supporting hyperparameter tuning.	`pip install azureml-core`
		`pip install --upgrade azureml-core`
		`pip show azureml-core`

`azureml-train-automl-runtime`	Contains functionality representing core automated ML and runtime components in Azure Machine Learning.	`pip install azureml-train-automl-runtime`
		`pip install --upgrade azureml-train-automl-runtime`
		`pip show azureml-train-automl-runtime`

`azureml-train-automl-client`	Contains core packages, modules, and classes for Azure Machine Learning.	`pip install azureml-train-automl-client`
		`pip install --upgrade azureml-train-automl-client`
		`pip show azureml-train-automl-client`

`azureml-telemetry`	This package is used to collect telemetry data like log messages, metrics, events, and activity messages.	`pip install azureml-telemetry`
		`pip install --upgrade azureml-telemetry`
		`pip show azureml-telemetry`

`azureml-synapse`	Contains Magic command to manage Synapse session and submit code and SparkMonitor widget to monitor the spark job progress, for both Jupyter and JupyterLab	`pip install azureml-synapse`
		`pip install --upgrade azureml-synapse`
		`pip show azureml-synapse`

Additional package	Use-case	Install/Upgrade/Show version

`azureml-sdk`	Thos package is used to build and run machine learning workflows upon the Azure Machine Learning service	`pip install azureml-sdk`
		`pip install --upgrade azureml-sdk`
		`pip show azureml-sdk`

`azureml-pipeline`	Contains pre-built steps that	`pip install azureml-pipeline-steps`

`azureml-pipeline-steps`	Contains pre-built steps that can be executed in an Azure Machine Learning Pipeline.	`pip install azureml-pipeline-steps`
		`pip install --upgrade azureml-pipeline-steps`
		`pip show azureml-pipeline-steps`

`azureml-pipeline-core`	Contains core functionality for Azure Machine Learning pipelines, which are configurable machine learning workflows.	`pip install azureml-pipeline-core`
		`pip install --upgrade azureml-pipeline-core`
		`pip show azureml-pipeline-core`

`azureml-pipeline`	This package is used to build, optimize, and manage machine learning workflows	`pip install azureml-pipeline`
		`pip install --upgrade azureml-pipeline`
		`pip show azureml-pipeline`

`azureml-opendatasets`	Contains core functionality for Azure Machine Learning pipelines, which are configurable machine learning workflows.	`pip install azureml-opendatasets`
		`pip install --upgrade azureml-opendatasets`
		`pip show azureml-opendatasets`

`azureml-interpret`	Contains functionality for working with model interpretability in Azure Machine Learning.	`pip install azureml-interpret`
		`pip install --upgrade azureml-interpret`
		`pip show azureml-interpret`

`azureml-defaults`	This package is a metapackage that is used internally by Azure Machine Learning.	`pip install azureml-defaults`
		`pip install --upgrade azureml-defaults`
		`pip show azureml-defaults`

`azureml-dataset-runtime`	The purpose of this package is to coordinate dependencies within AzureML packages. This package is internal, and is not intended to be used directly.	`pip install azureml-dataset-runtime`
		`pip install --upgrade azureml-dataset-runtime`
		`pip show azureml-dataset-runtime`

Additional package	Use-case	Install/Upgrade/Show version

`azureml-datadrift`	Contains functionality to detect when model training data has drifted from its scoring data.	`pip install azureml-datadrift`
		`pip install --upgrade azureml-datadrift`
		`pip show azureml-datadrift`

`azureml-contrib-server`	This package is local HTTP service used to expose a	`pip install azureml-contrib-server` `pip install --upgrade azureml-contrib`

server	service used to expose a subset of the functionality provided by the AzureML SDK to VS Tools for AI extensions (VSCode and Visual Studio)	pip install --upgrade azureml-contrib-server pip show azureml-contrib-server
azureml-contrib-run	This package is used to contain the integration code of AzureML with Mlflow.	pip install azureml-core pip install --upgrade azureml-core pip show azureml-core
azureml-contrib-reinforcementlearning	Contains functionality for creating a Windows compute target in Azure Machine Learning.	pip install azureml-contrib-reinforcementlearning pip install --upgrade azureml-contrib-reinforcementlearning pip show azureml-contrib-reinforcementlearning
azureml-contrib-pipeline-steps	Contains modules and classes for specialized Azure Machine Learning Pipeline steps and associated configuration.	pip install azureml-contrib-pipeline-steps pip install --upgrade azureml-contrib-pipeline-steps pip show azureml-contrib-pipeline-steps
azureml-contrib-notebook	Contains extensions for working with Jupyter notebooks in Azure Machine Learning.	pip install azureml-contrib-notebook pip install --upgrade azureml-contrib-notebook pip show azureml-contrib-notebook
azureml-contrib-gbdt	This package contains LightGBM estimator.	pip install azureml-contrib-gbdt pip install --upgrade azureml-contrib-gbdt pip show azureml-contrib-gbdt
azureml-contrib-functions	Contains functionality for packaging Azure Machine Learning models for	pip install azureml-contrib-functions pip install --upgrade azureml-contrib-functions pip show azureml-contrib-functions
Additional package	**Use-case**	**Install/Upgrade/Show version**
	deployment to Azure Functions.	
azureml-contrib-fairness	This package supports the use of fairness assessment dashboards in Azure Machine Learning Studio	pip install azureml-contrib-fairness pip install --upgrade azureml-contrib-fairness pip show azureml-contrib-fairness

`azureml-contrib-dataset`	Contains specialized functionality for working with Dataset objects in Azure Machine Learning.	`pip install azureml-contrib-dataset`
		`pip install --upgrade azureml-contrib-dataset`
		`pip show azureml-contrib-dataset`

`azureml-contrib-automl-pipeline-steps`	Contains pre-built steps that can be executed in an Azure Machine Learning Pipeline.	`pip install azureml-contrib-automl-pipeline-steps`
		`pip install --upgrade azureml-contrib-automl-pipeline-steps`
		`pip show azureml-contrib-automl-pipeline-steps`

`azureml-contrib-automl-dnn-vision`	This package is only meant to be used by AutoML system-generated scripts. To install in Windows, the "torch" and "torchvision" packages must be installed separately before this package.	`pip install azureml-contrib-automl-dnn-vision`
		`pip install --upgrade azureml-contrib-automl-dnn-vision`
		`pip show azureml-contrib-automl-dnn-vision`

`azureml-contrib-automl-dnn-forecasting`	Azure ML CLI extension common package. Common across azure-cli-ml and azure-cli-ml-preview.	`pip install azureml-contrib-automl-dnn-forecasting`
		`pip install --upgrade azureml-contrib-automl-dnn-forecasting`
		`pip show azureml-contrib-automl-dnn-forecasting`

`azureml-contrib-aisc`	AzureML Contrib for AzureML AI Super Computer compute target. AISCCompute is a managed AI compute infrastructure, which can be attached to a workspace by cluster admin.	`pip install azureml-contrib-aisc`
		`pip install --upgrade azureml-contrib-aisc`
		`pip show azureml-contrib-aisc`

Additional package	Use-case	Install/Upgrade/Show version

`azureml-cli-common`	Azure ML CLI extension common package. Common across azure-cli-ml and azure-cli-ml-preview.	`pip install azureml-cli-common`
		`pip install --upgrade azureml-cli-common`
		`pip show azureml-cli-common`

`azureml-automl-dnn-nlp`	This package is only meant to be used by AutoML	`pip install azureml-automl-dnn-nlp`

nlp	to be used by AutoML system-generated scripts.	pip install --upgrade azureml-automl-dnn-nlp pip show azureml-automl-dnn-nlp
azureml-accel-models	Accelerate deep neural networks on FPGAs with the Azure ML Hardware Accelerated Models Service.	pip install azureml-accel-models pip install --upgrade azureml-accel-models pip show azureml-accel-models
azureml-inference-server-http	This package enable Local Development,CI/CD Integration,Server Routes.	pip install azureml-inference-server-http pip install --upgrade azureml-inference-server-http pip show azureml-inference-server-http
azure-ml-component	This package contains functionality for authoring and managing Azure Machine Learning components authoring and submiting pipelines using components	pip install azure-ml-component pip install --upgrade azure-ml-component pip show azure-ml-component
azureml-pipeline-wrapper	This package contains functionality for authoring and managing Azure Machine Learning modules , authoring and submiting pipelines using modules	pip install azureml-pipeline-wrapper pip install --upgrade azureml-pipeline-wrapper pip show azureml-pipeline-wrapper
azureml-designer-cv-modules	Modules to pre-process and transform images such as to crop, pad or resize.	pip install azureml-designer-cv-modules pip install --upgrade azureml-designer-cv-modules pip show azureml-designer-cv-modules
azureml-designer-pytorch-modules	Modules to train and inference image classification models based on pytorch framework.	pip install azureml-designer-pytorch-modules pip install --upgrade azureml-designer-pytorch-modules pip show azureml-designer-pytorch-modules
Additional package	**Use-case**	**/Show version**
azureml-designer-vowpal-wabbit-modules	Modules to train and inference models based on Vowpal Wabbit framework.	pip install azureml-designer-vowpal-wabbit-modules pip install --upgrade azureml-designer-vowpal-wabbit-modules

		`pip show azureml-designer-vowpal-wabbit-modules`

`azureml-designer-classic-modules`	A variety of modules for data processing, model training, inferencing and evaluation.	`pip install azureml-designer-classic-modules`
		`pip install --upgrade azureml-designer-classic-modules`
		`pip show azureml-designer-classic-modules`

`azureml-designer-recommender-modules`	Modules to train and inference recommendation models based on deep neural network.	`pip install azureml-designer-recommender-modules`
		`pip install --upgrade azureml-designer-recommender-modules`
		`pip show azureml-designer-recommender-modules`

`azureml-designer-internal`	Internal functionalities provided for built-in modules.	`pip install azureml-designer-internal`
		`pip install --upgrade azureml-designer-internal`
		`pip show azureml-designer-internal`

`azureml-designer-core`	Core functionalities for data-type definition, data io and frequently-used functions.	`pip install azureml-designer-core`
		`pip install --upgrade azureml-designer-core`
		`pip show azureml-designer-core`

`azureml-designer-datatransform-modules`	Modules to transform dataset, such as by applying math operations, sql queries, clipping outliers or generating a statistics report.	`pip install azureml-designer-datatransform-modules`
		`pip install --upgrade azureml-designer-datatransform-modules`
		`pip show azureml-designer-datatransform-modules`

`azureml-designer-dataio-modules`	Modules to load data into azure machine learning designer and write data to cloud-based storage.	`pip install azureml-designer-dataio-modules`
		`pip install --upgrade azureml-designer-dataio-modules`
		`pip show azureml-designer-dataio-modules`

Additional package	**Use-case**	**Install/Upgrade/Show version**

`azureml-designer-serving`	Provide functionalities to invoke built-in modules in deployment service.	`pip install azureml-designer-serving`
		`pip install --upgrade azureml-designer-serving`
		`pip show azureml-designer-serving`

`azureml-contrib`	Contains functionality for	`pip install azureml-contrib-datadrift`

`azureml-contrib-datadrift`	Contains functionality for data drift detection for various datasets used in machine learning, including training datasets and scoring dataset.	`pip install azureml-contrib-datadrift`
		`pip install --upgrade azureml-contrib-datadrift`
		`pip show azureml-contrib-datadrift`

`azureml-contrib-explain-model`	Contains experimental functionality for the azureml-explain-model package, which offers a variety of services for machine learning model interpretability.	`pip install azureml-contrib-explain-model`
		`pip install --upgrade azureml-contrib-explain-model`
		`pip show azureml-contrib-explain-model`

`azureml-contrib-opendatasets`	This package provides a set of APIs to consume Azure Open Datasets.	`pip install azureml-contrib-opendatasets`
		`pip install --upgrade azureml-contrib-opendatasets`
		`pip show azureml-contrib-opendatasets`

`azureml-train-widgets`	Contains widgets for Jupyter Notebooks to visually track your runs.	`pip install azureml-train-widgets`
		`pip install --upgrade azureml-train-widgets`
		`pip show azureml-train-widgets`

For more details on above packages, see AzureML on pypi .

Additional use-case guidance

If your use-case is described below, note the guidance and any recommended actions.

Use-case	Guidance
Using `automl`	Install the **full** azureml-train-automl SDK in a new 64-bit Python environment. A new 64-bit environment is required because of a dependency on the LightGBM framework. This package installs and pins specific versions of data science packages for compatibility, which requires a clean
Use-case	**Guidance**
	environment. The **thin client**, `azureml-train-automl-client`, package doesn't install additional data science packages or require a clean Python environment. We recommend `azureml-train-automl-client` if you only need to submit automated ML runs to a remote compute, and don't need to submit local runs or

	download your model locally. One version backwards and one version forward compatibility is only supported for models trained with the full `azureml-train-automl` package. For example, if a model is trained with SDK version 1.29.0, then you can inference with SDK versions between 1.28.0 and 1.30.0.
Using Azure Databricks	In the Azure Databricks environment, use the library sources detailed in this guide for installing the SDK. Also, see these tips for further information on working with Azure Machine Learning SDK for Python on Azure Databricks.
Using Azure Data Science Virtual Machine	Azure Data Science Virtual Machines created after September 27, 2018 come with the Python SDK preinstalled.
Running Azure Machine Learning tutorials or notebooks	If you are using an older version of the SDK than the one mentioned in the tutorial or notebook, you should upgrade your SDK. Some functionality in the tutorials and notebooks may require additional Python packages such as `matplotlib`, `scikit-learn`, or `pandas`. Instructions in each tutorial and notebook will show you which packages are required.

Troubleshooting

- **Pip Installation: Dependencies are not guaranteed to be consistent with single-line installation:**

  This is a known limitation of pip, as it does not have a functioning dependency resolver when you install as a single line. The first unique dependency is the only one it looks at.

  In the following code `azureml-datadrift` and `azureml-train-automl` are both installed using a single-line pip install.

  ```
  pip install azureml-datadrift, azureml-train-automl
  ```

  For this example, let's say `azureml-datadrift` requires version > 1.0 and `azureml-train-automl` requires version < 1.2. If the latest version of `azureml-datadrift` is 1.3, then both packages get upgraded to 1.3, regardless of the `azureml-train-automl` package requirement for an older version.

package requirement for an older version.

To ensure the appropriate versions are installed for your packages, install using multiple lines like in the following code. Order isn't an issue here, since pip explicitly downgrades as part of the next line call. And so, the appropriate version dependencies are applied.

```
pip install azureml-datadrift
pip install azureml-train-automl
```

- **Explanation package not guaranteed to be installed when installing the azureml-train-automl-client:**

  When running a remote AutoML run with model explanation enabled, you will see an error message "Please install azureml-explain-model package for model explanations." This is a known issue. As a workaround follow one of the steps below:

  1. Install azureml-explain-model locally.

```
pip install azureml-explain-model
```

  2. Disable the explainability feature entirely by passing model_explainability=False in the AutoML configuration.

```
automl_config = AutoMLConfig(task = 'classification',
                        path = '.',
                        debug_log = 'automated_ml_errors.log',
                        compute_target = compute_target,
                        run_configuration = aml_run_config,

                        featurization = 'auto',
                        model_explainability=False,
                        training_data = prepped_data,
                        label_column_name = 'Survived',
                        **automl_settings)
```

- **Panda errors: Typically seen during AutoML Experiment:**

When manually setting up your environment using pip, you may notice errors (especially from pandas) due to unsupported package versions being installed.

For example, `ModuleNotFoundError: No module named 'pandas.core.internals.managers'; 'pandas.core.internals' is not a package`

In order to prevent such errors, please install the AutoML SDK using the automl_setup.cmd :

1. Open an Anaconda prompt and clone the GitHub repository for a set of sample notebooks.

```
Bash

git clone https://github.com/Azure/MachineLearningNotebooks.git
```

2. cd to the how-to-use-azureml/automated-machine-learning folder where the sample notebooks were extracted and then run:

```
Bash

automl_setup
```

- **KeyError: 'brand' when running AutoML on local compute or Azure Databricks cluster**

  If a new environment was created after June 10, 2020, by using SDK 1.7.0 or earlier, training might fail with this error due to an update in the py-cpuinfo package. (Environments created on or before June 10, 2020, are unaffected, as are experiments run on remote compute because cached training images are used.) To work around this issue, take either of the following two steps:

  - Update the SDK version to 1.8.0 or later (this also downgrades py-cpuinfo to 5.0.0):

    ```
    Bash

    pip install --upgrade azureml-sdk[automl]
    ```

  - Downgrade the installed version of py-cpuinfo to 5.0.0:

    ```
    Bash
    ```

```
pip install py-cpuinfo==5.0.0
```

- **Error message: Cannot uninstall 'PyYAML'**

  Azure Machine Learning SDK for Python: PyYAML is a `distutils` installed project. Therefore, we cannot accurately determine which files belong to it if there is a partial uninstall. To continue installing the SDK while ignoring this error, use:

  Python

  ```
  pip install --upgrade azureml-sdk[notebooks,automl] --ignore-installed PyYAML
  ```

- **Azure Machine Learning SDK installation failing with an exception: ModuleNotFoundError: No module named 'ruamel' or 'ImportError: No module named ruamel.yaml'**

  This issue is getting encountered with the installation of Azure Machine Learning SDK for Python on the latest pip (>20.1.1) in the conda base environment for all released versions of Azure Machine Learning SDK for Python. Refer to the following workarounds:

  - Avoid installing Python SDK on the conda base environment, rather create your conda environment and install SDK on that newly created user environment. The latest pip should work on that new conda environment.
  - For creating images in docker, where you cannot switch away from conda base environment, please pin pip<=20.1.1 in the docker file.

  Python

  ```
  conda install -c r -y conda python=3.8 pip=20.1.1
  ```

Next steps

Try these next steps to learn how to use the Azure Machine Learning service SDK for Python:

1. Read the Azure Machine Learnin Python SDK overview to learn about key classes and design patterns with code samples.

2. Follow Azure Machine Learning Python Get Started tutorial to begin creating experiments and models.