Automated machine learning, also referred to as automated ML, is the process of automating the time consuming, iterative tasks of machine learning model development. It allows data scientists, analysts, and developers to build ML models with high scale, efficiency, and productivity all while sustaining model quality.

With automated machine learning, you'll accelerate the time it takes to get production-ready ML models with great ease and efficiency.

**When to use automated ML**

Automated ML democratizes the machine learning model development process, and empowers its users, no matter their data science expertise, to identify an end-to-end machine learning pipeline for any problem.

Data scientists, analysts and developers across industries can use automated ML to:

* Implement machine learning solutions without extensive programming knowledge
* Save time and resources
* Leverage data science best practices
* Provide agile problem-solving

The following table lists common automated ML use cases.

* Classification
* Regression
* Time Series Forecasting

## How automated ML works

Using **Azure Machine Learning**, you can design and run your automated ML training experiments with these steps:

1. **Identify the ML problem** to be solved: classification, forecasting, or regression
2. **Specify the source and format of the labeled training data**: Numpy arrays or Pandas dataframe
3. **Configure the compute target for model training**, such as your [local computer, Azure Machine Learning Computes, remote VMs, or Azure Databricks](https://docs.microsoft.com/en-us/azure/machine-learning/service/how-to-set-up-training-targets).
4. **Configure the automated machine learning parameters** that determine how many iterations over different models, hyperparameter settings, advanced preprocessing/featurization, and what metrics to look at when determining the best model. You can configure the settings for automatic training experiment in [Azure portal](https://docs.microsoft.com/en-us/azure/machine-learning/service/how-to-create-portal-experiments), [the workspace landing page (preview)](https://ml.azure.com), or [with the SDK](https://docs.microsoft.com/en-us/azure/machine-learning/service/how-to-configure-auto-train).
5. **Submit the training run.**

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## Create a workspace

An Azure Machine Learning workspace is a foundational resource in the cloud that you use to experiment, train, and deploy machine learning models. It ties your Azure subscription and resource group to an easily consumed object in the service.

## Get the best model

In addition to being able to download model files from the experiment in the portal, you can also download them programmatically. The following code iterates through each run in the experiment, and accesses both the logged run metrics and the run details (which contains the run\_id). This keeps track of the best run, in this case the run with the lowest root-mean-squared-error.