Pre-built Artificial Intelligence

Cloud Translation API

Cloud Natural Language API

Dialogflow Enterprise Edition

Speech-to-Text API

Text-to-Speech API
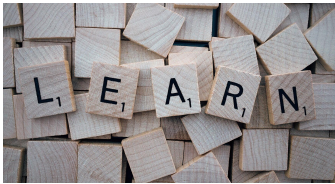
Vision API

Video Intelligence API

Google Cloud

TIP: Machine Learning is more of a focus of the Data Engineering track rather than the Cloud Architect track, but it is still part of the infrastructure a Cloud Architect might use to define solutions. So you should be familiar with the services and what they do.

Pre-built models are offered as services. In many cases these building blocks can be used to create the application you want without the expense or complexity of creating your own models.

The Speech-to-Text API converts audio to text for data processing. The Cloud Natural Language API recognizes parts of speech called entities and sentiment. The Cloud Translation API converts text in one language to another. Dialogflow Enterprise Edition is used to build chatbots to conduct conversations. The Text-to-Speech API converts text into high quality voice audio. Vision API is for working with and recognizing content in still images. And the Video Intelligence API is for recognizing motion and action in video.

AutoML builds custom AI models

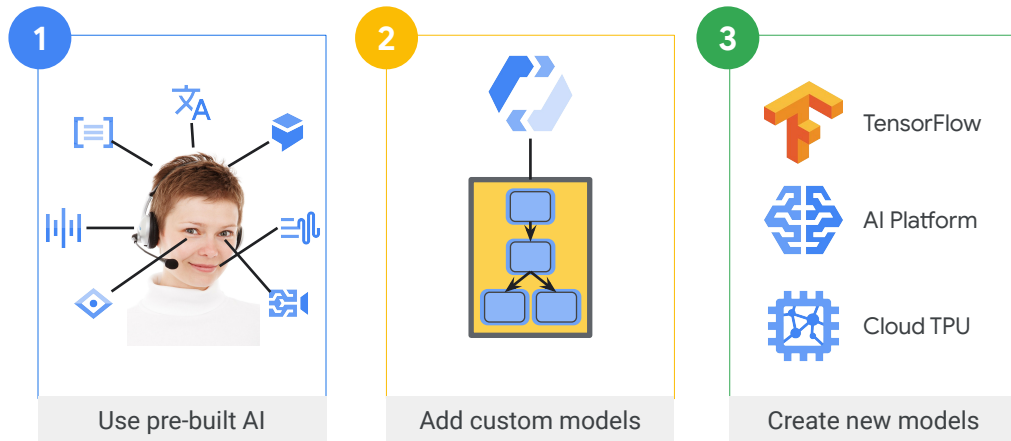| AutoML Natural Language | AutoML Translation | AutoML Vision |

Google Cloud

AutoML Natural Language classifies English content into custom categories.

AutoML Translation enables models that translate into words and phrases specific to your domain.
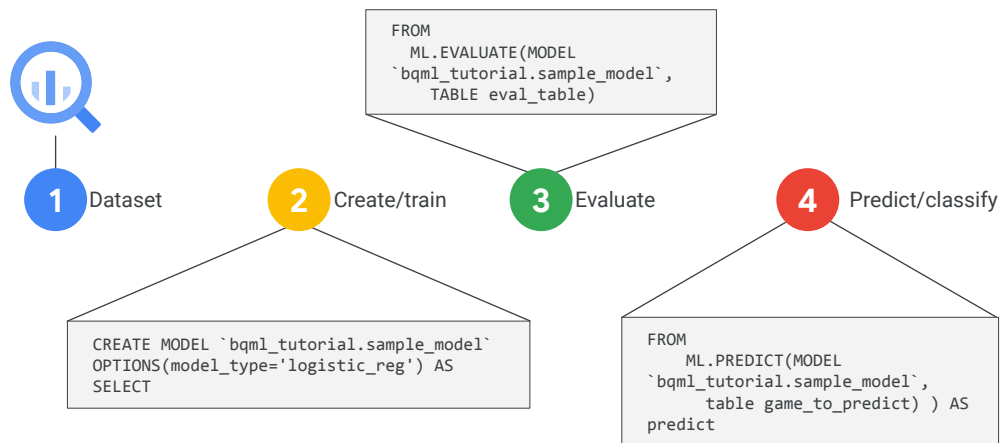
AutoML Vision classifies images according to your defined labels.

Artificial Intelligence architectural strategy

1 Use pre-built AI

2 Add custom models

3
- TensorFlow
- AI Platform
- Cloud TPU

Create new models

Google Cloud

The recommended strategy is to first, use the pre-built artificial intelligence services. Next, you can use AutoML to produce Custom Models which can be used with the pre-built services or on their own. Remember that you can divide a problem into specialized parts and use multiple Custom Models together. Finally, if you discover you need more advanced features, you can use the Machine Learning and Artificial Intelligence services to create new models.

BigQuery ML


```
FROM
  ML.EVALUATE(MODEL
`bqml_tutorial.sample_model`,
    TABLE eval_table)
```

1 Dataset   **2** Create/train   **3** Evaluate   **4** Predict/classify

```
CREATE MODEL `bqml_tutorial.sample_model`
OPTIONS(model_type='logistic_reg') AS
SELECT
```

```
FROM
  ML.PREDICT(MODEL
`bqml_tutorial.sample_model`,
    table game_to_predict) ) AS
predict
```

There are two key benefits of BigQuery ML. First, it works on your data that is already in BigQuery storage -- in your Data Warehouse or Data Lake.
So the data does not need to be copied out of BigQuery or reformatted. This improves efficiency in many ways, and in some cases resolves privacy concerns.

Second, BigQuery ML uses SQL commands. That means BigQuery users can learn to create their own models by extending their use of a language they already know.

Works with full models (not Custom Models like AutoML).

The locality of your model is the same as your dataset. So that is defined when the dataset is created.