

Simplified streaming pipeline and no-code machine learning with Google Cloud

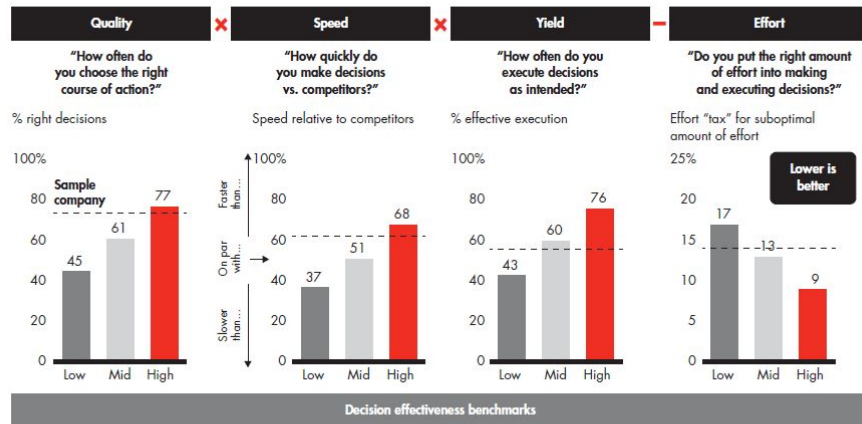
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Business Problem

10-year study shows a relationship between business that make faster decisions and success.

2018 survey of top marketing organizations showed 84% of them are expanding their machine learning.

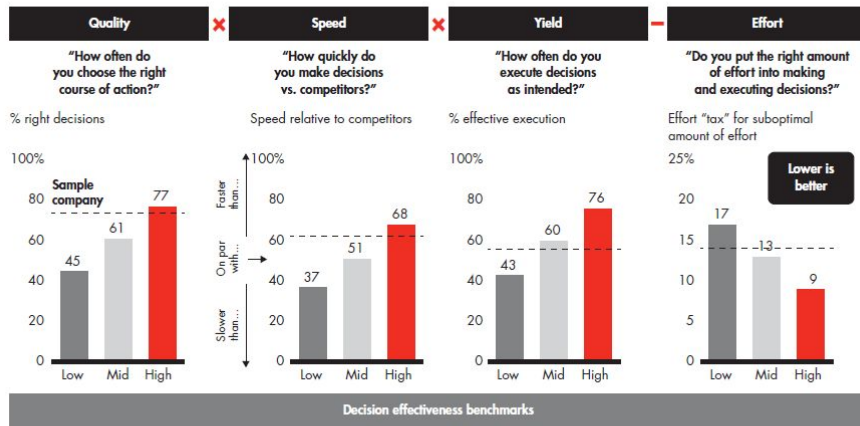
Figure 1: Decision effectiveness can be benchmarked by quality, speed, yield and effort



Note: High decision effectiveness range = top quintile of decision effectiveness scores; Low = bottom quintile; Mid = all other
Source: Bain decision and org effectiveness survey Jan 2013 (n=1001)

- 84% of marketing organizations are implementing or expanding AI and machine learning in 2018.
- 75% of enterprises using AI and machine learning enhance customer satisfaction by more than 10%.
- 3 in 4 organizations implementing AI and machine learning increase sales of new products and services by more than 10% according to Capgemini.

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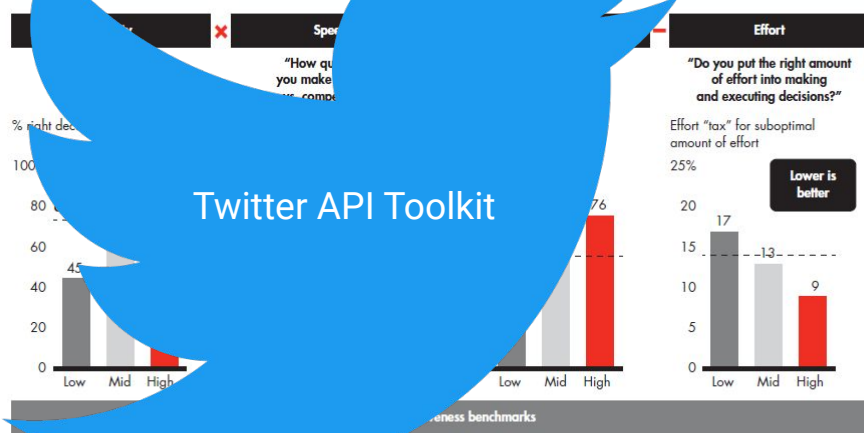
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Google

Cloud



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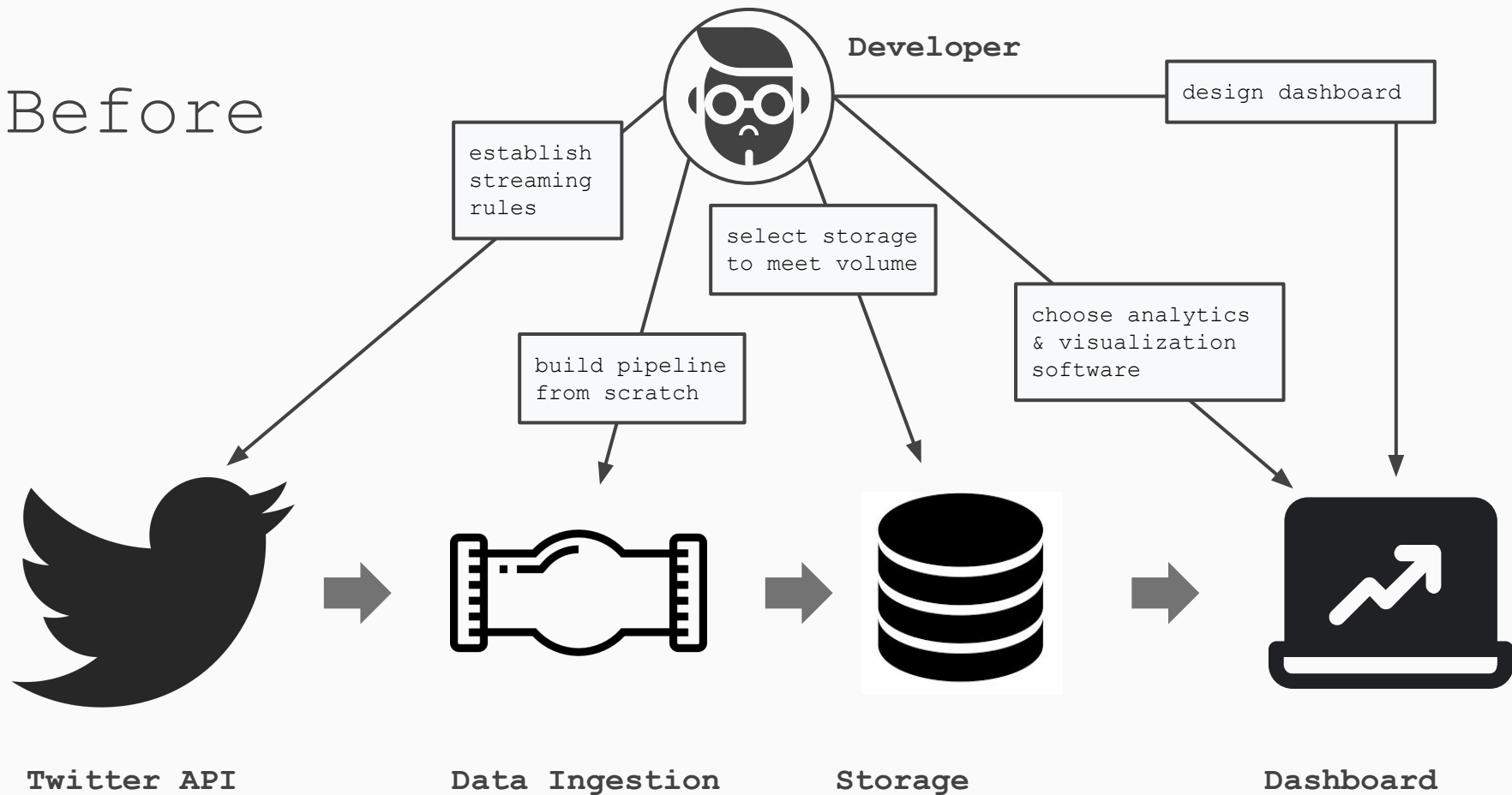


Note: High = top quintile of openness scores; Low = bottom quintile; Mid = all other
Source: Bain decision analysis, 1998. $N = 1,001$

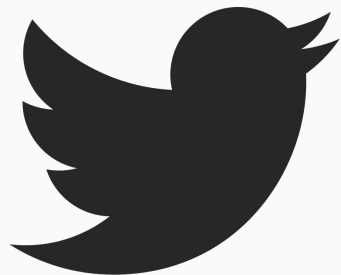


Google's AutoML

Before



Separate Tools



Takes . . . a . . . lot . . . of . . . effort . . . to . . . connect . . . all . . . the . . . parts

60

hours to develop the entire process.

After

Developer

establish
streaming
rules

design dashboard

Twitter API



Looker Studio

Dashboard



Google Cloud
Pub/Sub

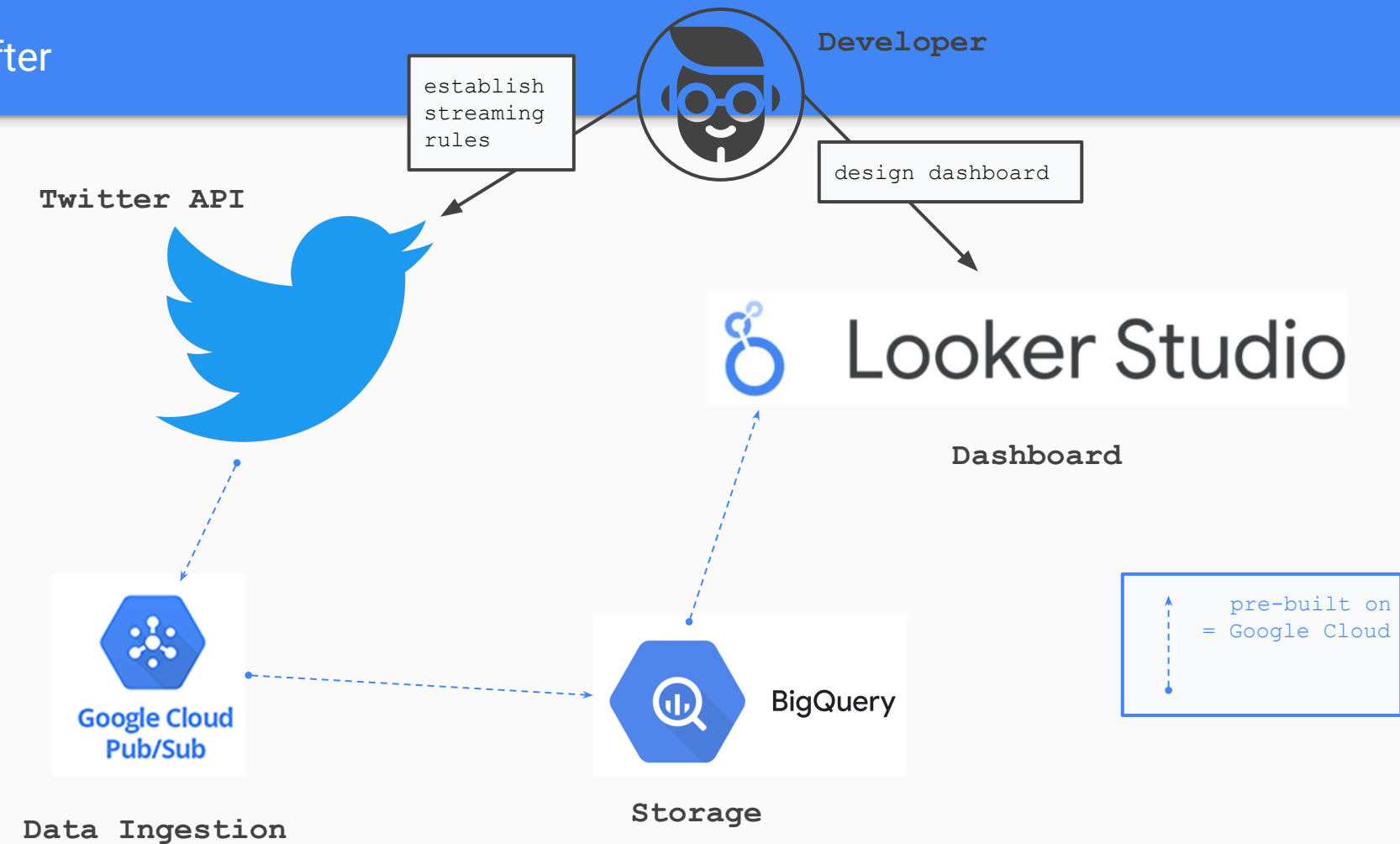
Data Ingestion



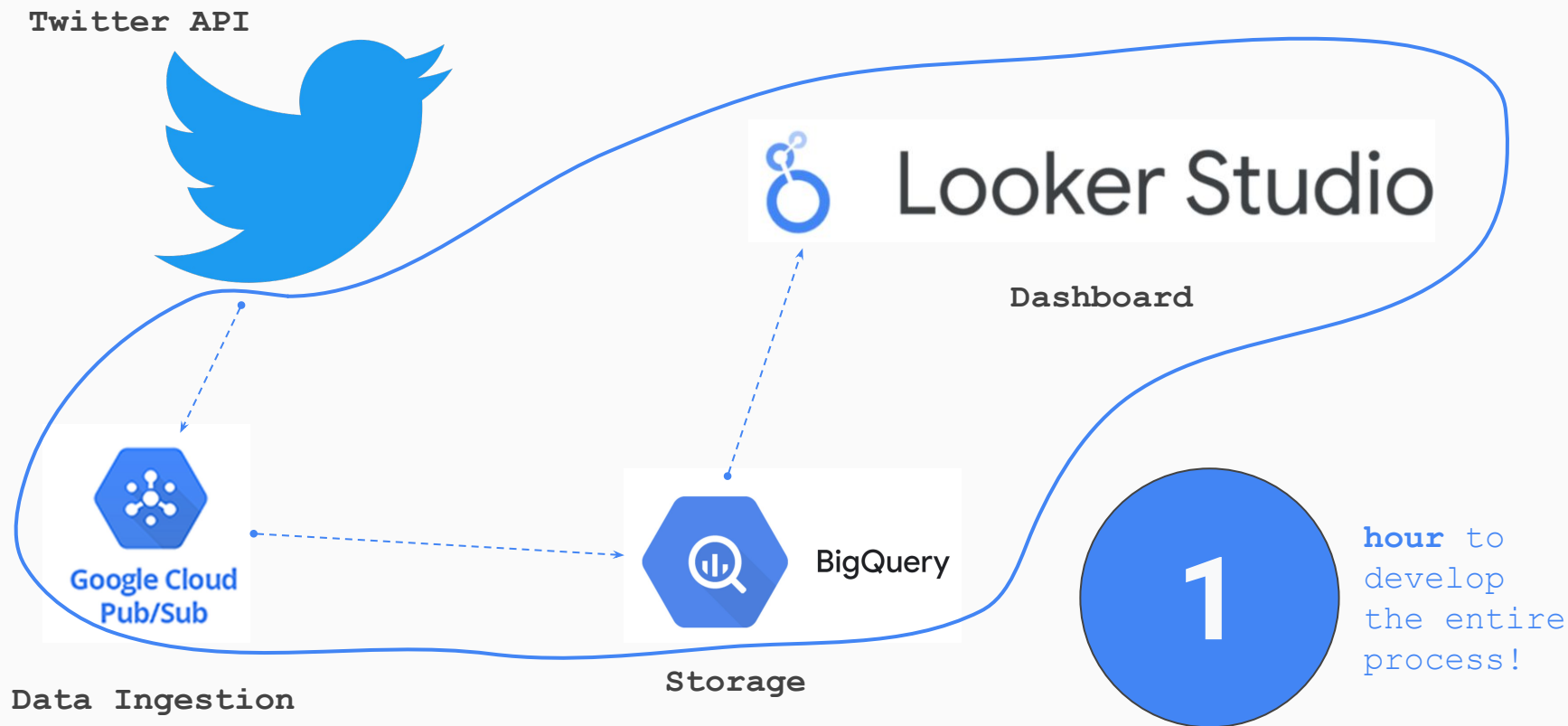
BigQuery

Storage

pre-built on
= Google Cloud



Single Ecosystem



Google Cloud Platform Products



Google Cloud
Pub/Sub



BigQuery



Google's AutoML



Looker Studio

Pub/Sub is used for streaming analytics and data pipelines to ingest and distribute data

At-least-once delivery:

Synchronous, cross-zone message replication and per-message receipt tracking ensures at-least-once delivery at any scale.

Exactly-once processing

Dataflow supports reliable, expressive, exactly-once processing of Pub/Sub streams.

No provisioning, auto-everything

Pub/Sub does not have shards or partitions. Just set your quota, publish, and consume.

Google Cloud–native integrations

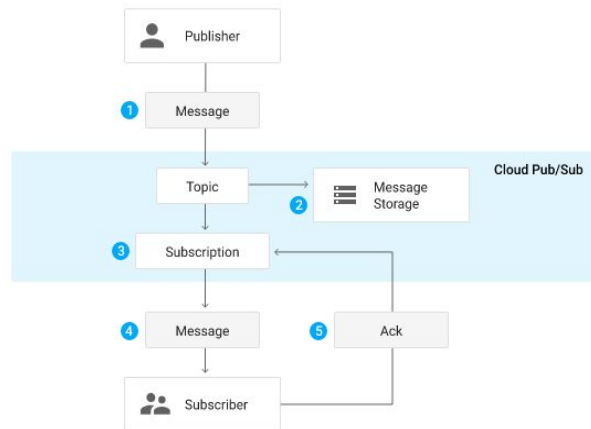
Take advantage of integrations with multiple services, such as Cloud Storage and Gmail update events and Cloud Functions for serverless event-driven computing.

Compliance and security

Pub/Sub is a HIPAA-compliant service, offering fine-grained access controls and end-to-end encryption.

Open

Open APIs and client libraries in seven languages support cross-cloud and hybrid deployments.



Big Query

BigQuery is a serverless, highly scalable cloud data warehouse solution that helps business to manage and analyze the data built-in query engine

Severless

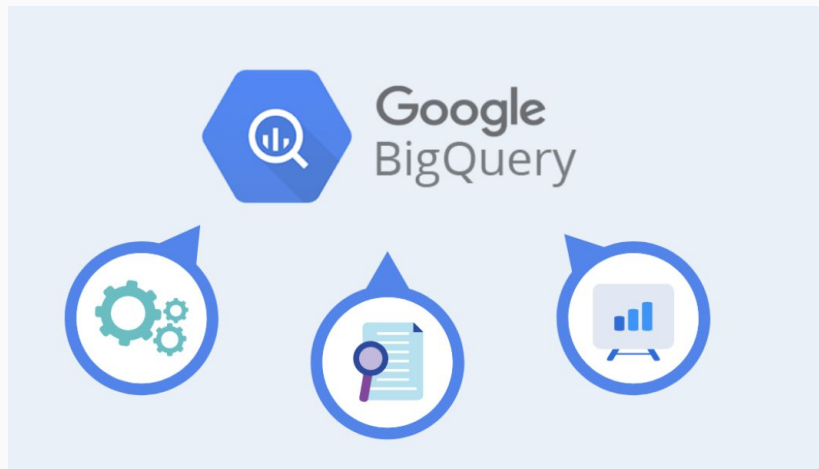
Companies can focus on data and analysis without need to worry about securing and managing infrastructure.

Built-in Machine learning

Integration with Vertex AI to enable users train and execute powerful model with just SQL.

Automatic backup and easy restore

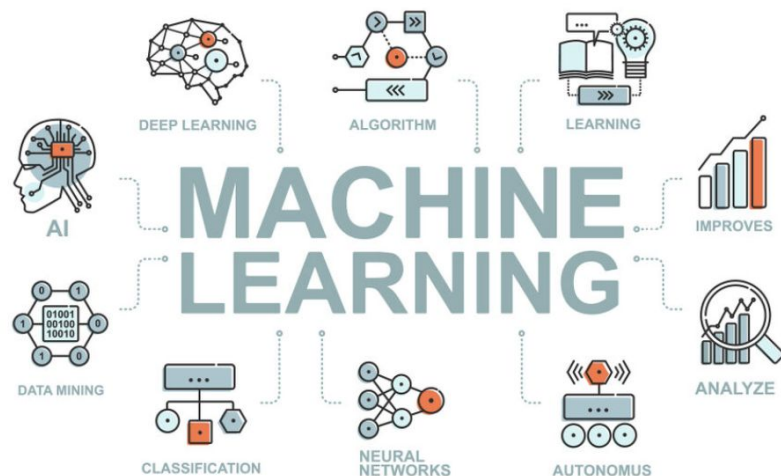
Automatically replicates and keep historical data, allow restore and compare data from different time.



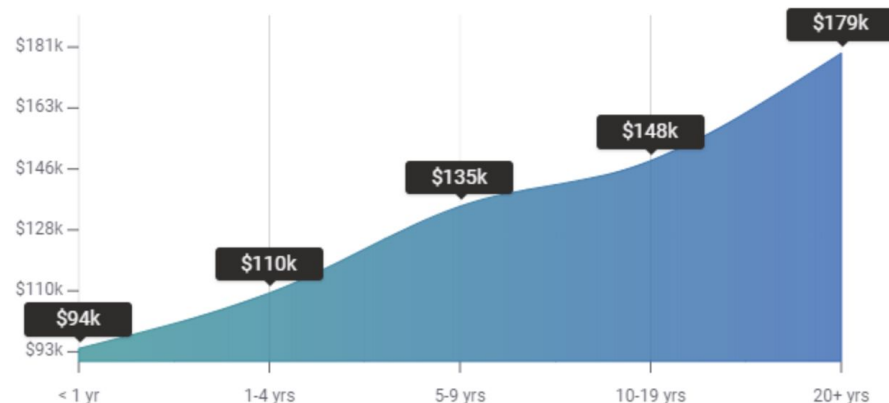
We have the data, now what ?

Machine learning model is a good way to extract useful information from data

However, it requires machine learning expert knowledge in order to be efficient and effective, and machine learning experts could be expensive

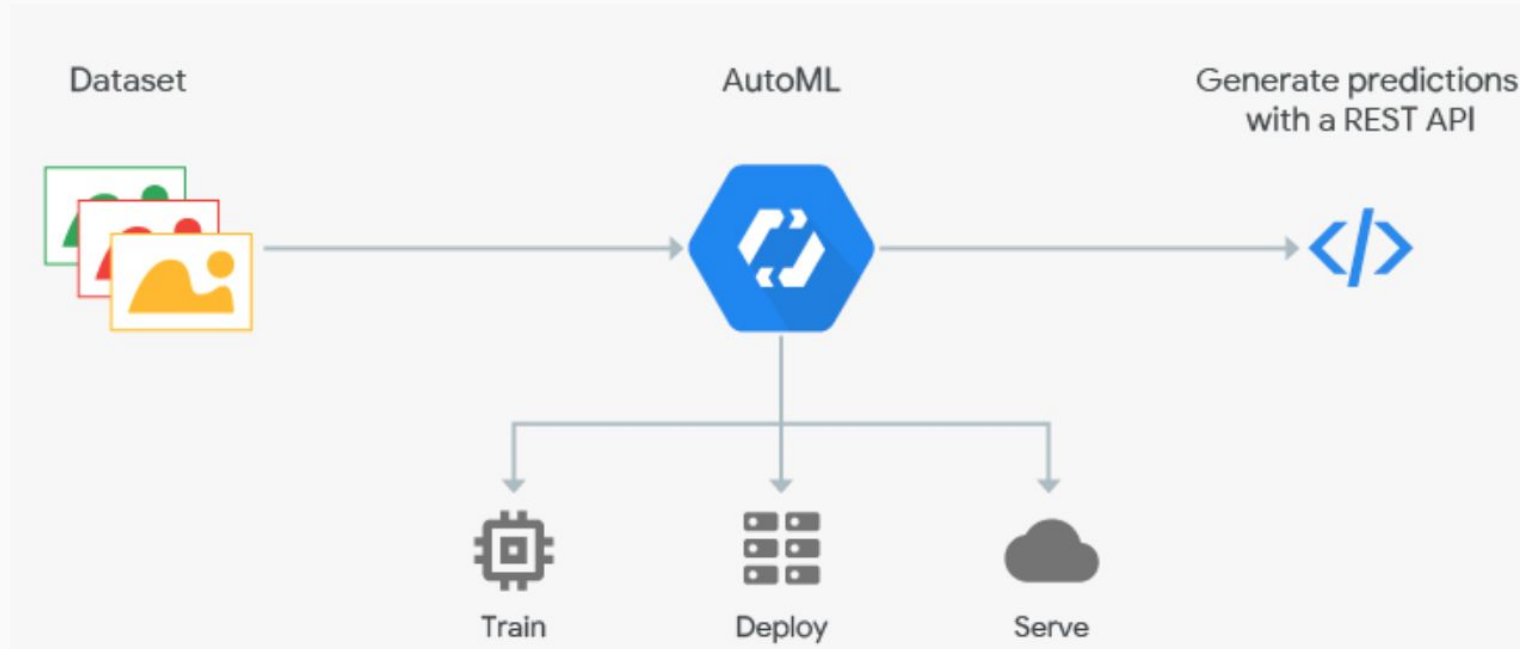


What is the Pay by Experience Level for Machine Learning Engineers?



What is AutoML ?

A product that enable user to train high-quality custom machine learning models with minimal effort and machine learning expertise



Versatile

Support various machine learning tasks for different data format

Data Format	Machine Learning Tasks
Tabular	Classification, Regression and Time series forecasting
Image	Image classification and Object detection
Text	Classification, Entity extraction and Sentiment analysis
Video	Action recognition, Classification, and Object tracking

Simple

Model Training and prediction is done with a few simple clicks and no coding knowledge required

Train new model

1 Training method

2 Model details

3 Training options

4 Compute and pricing

START TRAINING

CANCEL

Dataset
untitled_1634546562139

Objective *

Regression

Please refer to the pricing guide for more details (and available deployment options) for each method.

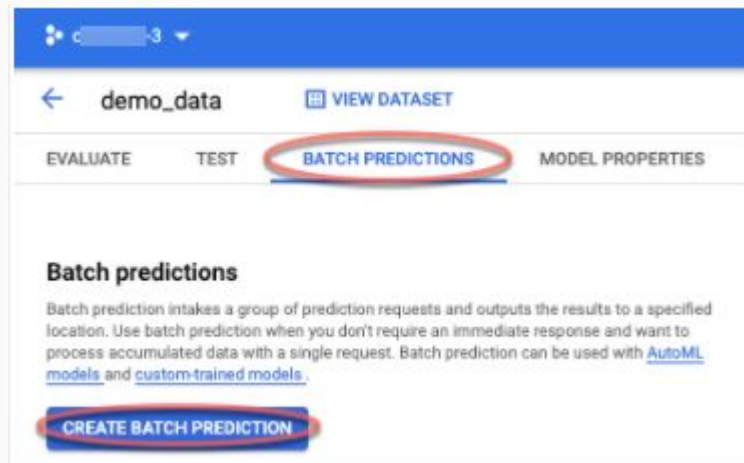
☒ AutoML

Train high quality models with minimal effort and machine learning expertise. Just specify how long you want to train. [Learn more](#)

☐ Custom training (advanced)

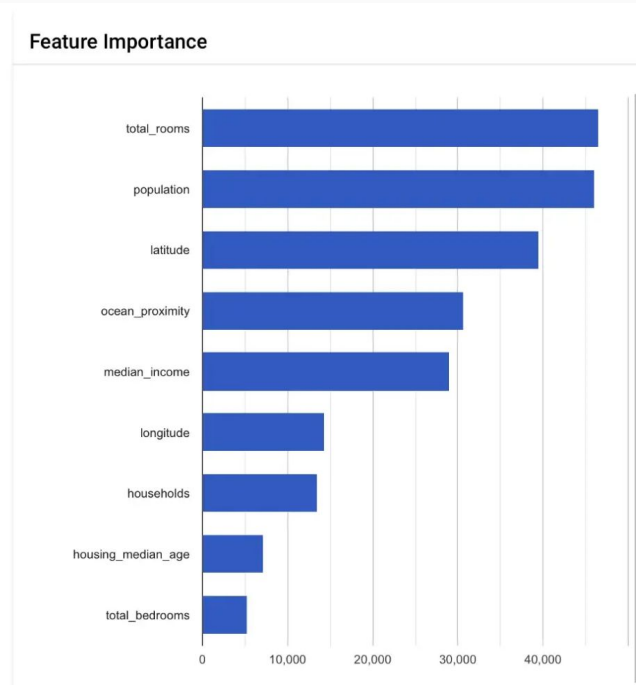
Run your TensorFlow, scikit-learn and XGBoost training applications in the cloud. Train with one of Google Cloud's pre-built containers or use your own. [Learn more](#)

CONTINUE



Explainability

AutoML auto generates the feature importance after training the model



Looker Studio

Looker Studio is a self-service business intelligence with unmatched flexibility for smarter business decisions

Data connectors

Unite your data by easily connecting to more than 800 data sources, BigQuery, Vertex AI, Google Map

Report templates

Transform your data to impactful business metrics and dimensions with intuitive smart reports

An easy-to-use web interface

Create meaningful, customizable, shareable charts and graphs with just a few clicks

