



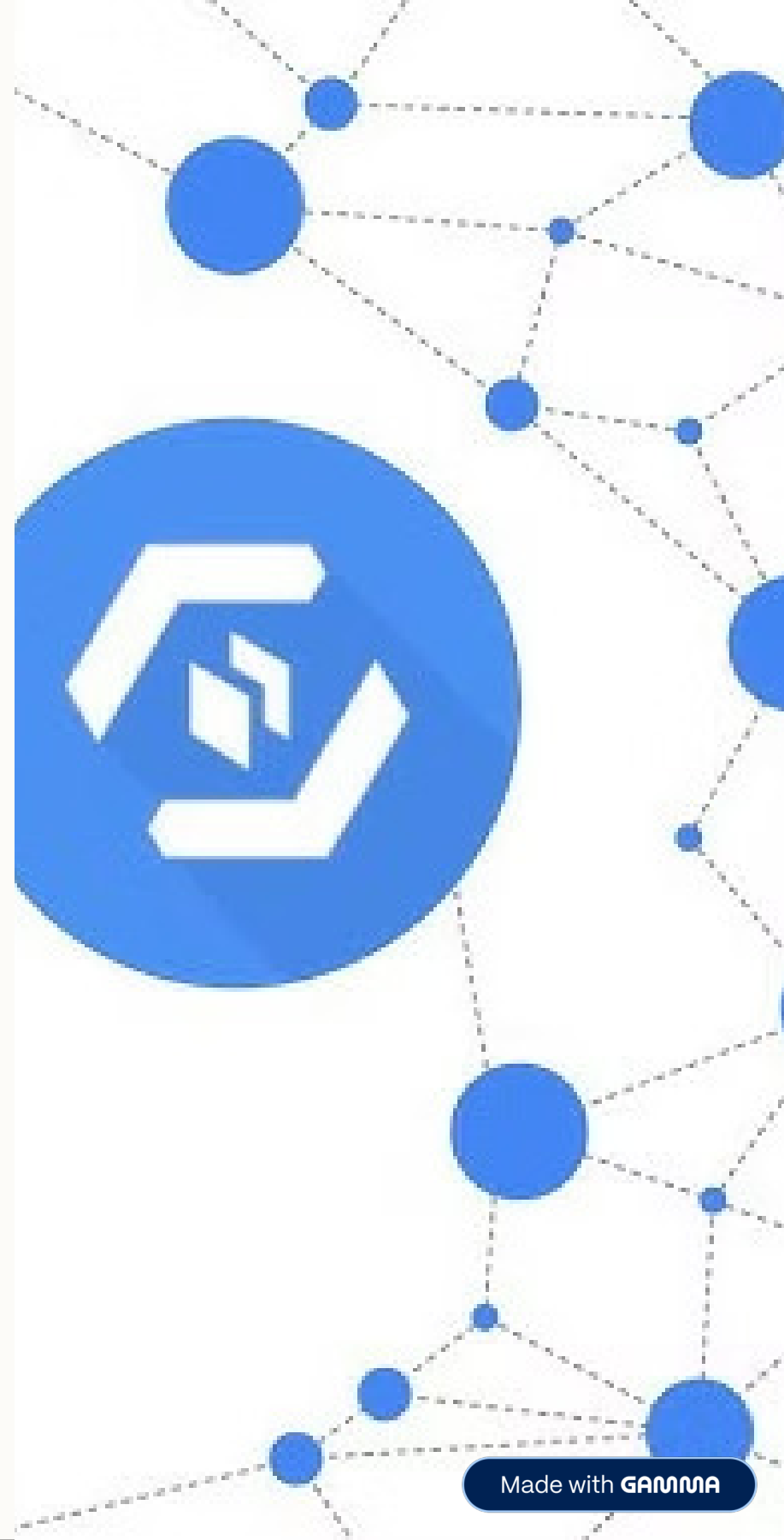
Tanisha Maratha

Roll No. - 32

Google Cloud AutoML

Cloud - GCP

suite of machine learning tools that lets users with limited ML expertise train high-quality custom models using a simple, no-code or low-code interface.



What is Google Cloud AutoML?

- A service by Google Cloud that lets you **build custom machine learning models**.
- Designed for users who have **limited ML expertise**.
- You only need to provide your data — AutoML handles model creation, training, and deployment.
- Great for building models for **vision, language, and tabular data**.



Why Use Google Cloud AutoML?



No ML Code

No need to write machine learning code.



Best Model

Automatically finds the best model for your data.



Easy to Use

Easy to use with Google Cloud tools.



Multiple Data Types

Supports multiple data types (images, text, tables).



Fast Deployment

Fast deployment of trained models.



Security & Scalability

Built-in security and scalability with Google Cloud.

How AutoML Works (Simple Steps)



Upload your data
(images, CSVs, or text).



AutoML trains the model
based on your data.



Evaluate and test
You can evaluate and test the model.

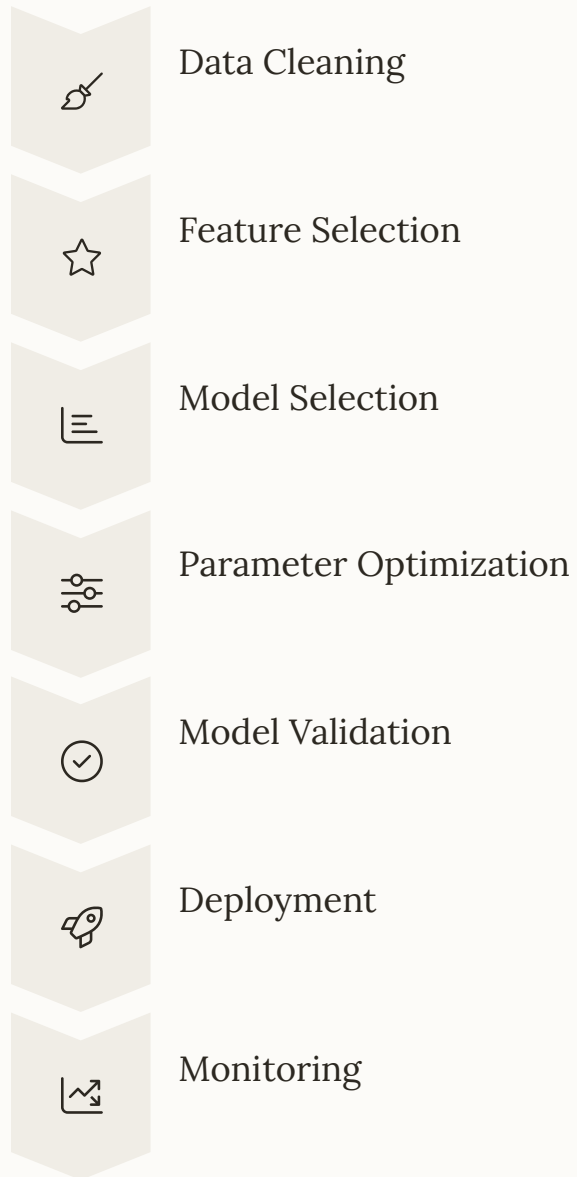


Deploy the model
to make predictions through an API.

Key Services in Google AutoML

AutoML Vision	Image classification, object detection
AutoML Natural Language	Text classification, entity extraction
AutoML Translation	Language translation
AutoML Tables	Predicting values from tabular data

Automated ML Lifecycle Steps



Who Can Use AutoML?

Students and Researchers
with no ML background.

Business Analysts
needing predictions.

Developers
who want fast ML integration.

Enterprises
that want to build models without hiring ML engineers.

Use Case Examples

Healthcare	Classify medical images
Retail	Product image tagging, demand forecasting
Finance	Fraud detection from tabular data
Manufacturing	Defect detection using image data
Education	Classifying documents or grading essays

AutoML Vision (Example Focus)

📷 Upload labeled images to AutoML Vision.

🧠 It builds a model to **identify or classify** images.

🎯 Example: Distinguish between healthy and diseased leaves in agriculture.



AutoML Tables (Example Focus)

← → 🔍 📄

	1	1	2	3	4	5	7	8	10
5	Tet8	Tet2	Tes1	Yet3	Tet2	Tet3	Wet3	Tet2	Yet3
990	130	160	250	19223	959	150	126		2000
967	100		900	12513					2720
257	240								
1433	150		900	22222					2314
	350		900	30310					5710
1452	234		170	25522					2516
1997	160		260	77014					2537
998	900		900	70325					3438
920	308		900	29321					3500
552	200			70310					5771
224	556		250	70322					2599
341	790								
934	230		760						
225	250		990	330					
202	900		750	335					
566	180								
950	130								
954	130								
967	110		270	261					
256	100								
947	100								

 Upload structured data (like Excel/CSV).

 AutoML builds a model to **predict future values**.

 Example: Predict student scores, sales growth, or customer churn.

☰

Vision Custom Models > Datasets > clouds

sara-vcn

Dataset: clouds

IMPORT LABEL TRAIN EVALUATE PREDICT EXPORT

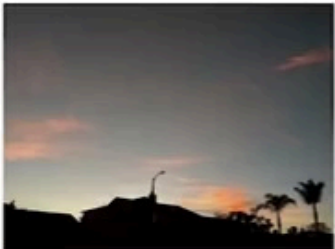
Define labels


Apply labels to images


Use human labeling service to label more images


Review image labels

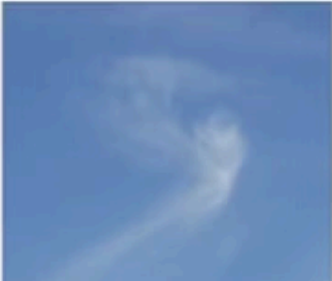
Filter by: Label: cirrus
















☰

Vision Custom Models > Datasets > clouds

sara-vcrm⋮

Dataset: clouds

⌵

IMPORT

LABEL

TRAIN

EVALUATE

PREDICT

EXPORT

Last model trained for the dataset: clouds_201801040739

Train a new model for this dataset ⓘ

Requirements:

✓

Between 2 and 100 labels.
Currently there are 10 labels.

⌵

✓

Between 20 and 100000 labeled images.
Currently there are 1590 labeled images.

⌵

✓

At least 10 example images per label.
Currently there are 0 labels with fewer than 10 example images.

⌵

Model name...


clouds_201801051220

Previously trained models can be found in ⓘ Models section

☐ Use the trained model to make predictions on my unlabeled data.

TRAIN

1590 out of 1654 images are labeled



Dataset: clouds

IMPORT LABEL TRAIN **EVALUATE** PREDICT EXPORT

Metrics for model: clouds_201801040739

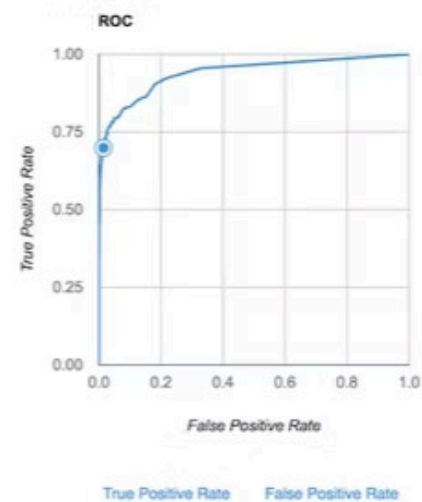
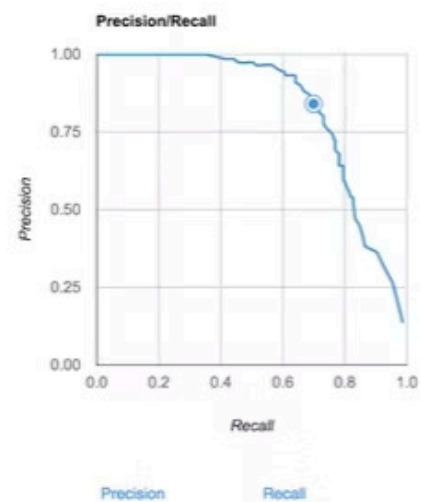
Compare to:

Based on 156 images in the test set. Trained using [snapshot of "clouds"](#)

Filter by: --any-label--

AUC (PRC): 0.8292

Confidence threshold curves



Dataset: clouds

IMPORT

LABEL

TRAIN

EVALUATE

PREDICT

EXPORT

Use model: clouds_201801040739

Query online

Select up to 10 images to make predictions on.

Choose Files

No file chosen

PREDICT

Query Cloud ML Engine from the command line

Query Cloud ML Engine from Python

Query Vision API

1590 out of 1654 images are labeled



cloud-test-imgs

Favorites

All My Files

Applications

Google Drive

Documents

Dev

Desktop

Downloads

Devices

Remote Disc

Shared

All...

Media

Photos

Name	Date Modified	Size	Kind
test-1.jpg	Today, 3:17 PM	105 KB	JPEG image
test-2.jpg	Jan 2, 2018, 3:10 PM	9.3 MB	JPEG image
test-3.jpg	Dec 19, 2017, 10:12 PM	871 KB	JPEG image

Options

CancelOpen

Query Cloud ML Engine from the command line



Query Cloud ML Engine from Python



Query Vision API



1590 out of 1654 images are labeled



Dataset: clouds



IMPORT

LABEL

TRAIN

EVALUATE

PREDICT

EXPORT

Use model: clouds_201801040739



Query online



Select up to 10 images to make predictions on.

Choose Files test-1.jpg

PREDICT



Query Cloud ML Engine from the command line



Query Cloud ML Engine from Python



Query Vision API



1590 out of 1654 images are labeled



Dataset: clouds



IMPORT

LABEL

TRAIN

EVALUATE

PREDICT

EXPORT

Query online



0.993 cirrus

Select up to 10 images to make predictions on.



Pricing & Plans

AutoML Vision	₹130–₹200/hour (training)	Increases with complexity
AutoML Tables	₹70–₹120/hour (training)	Based on dataset size
Predictions	₹8–₹30 per 1,000 predictions	Pay-per-use after deployment
Free Tier	Yes (limited training)	Up to 40 node hours for training, 1 node hour for a prediction

✓ Pay-as-you-go pricing model

✓ Scalable for small to enterprise-level usage

Security & Integration

 **Built-in Google Cloud IAM (Identity and Access Management)** for access control in project.

 **Monitor model usage** with Cloud Logging for tracking (like when it's used, by whom, and for what data.)

 **Integrates with Other Google Cloud Services:**

<u>Service</u>	<u>Purpose</u>
BigQuery	Store and analyze large tables of data
Cloud Storage	Save and load files (e.g., CSVs, images)
Vertex AI	For advanced ML model building and deployment
Cloud Functions	Automate tasks like sending data to your model
APIs	Connect AutoML to apps, dashboards, or websites