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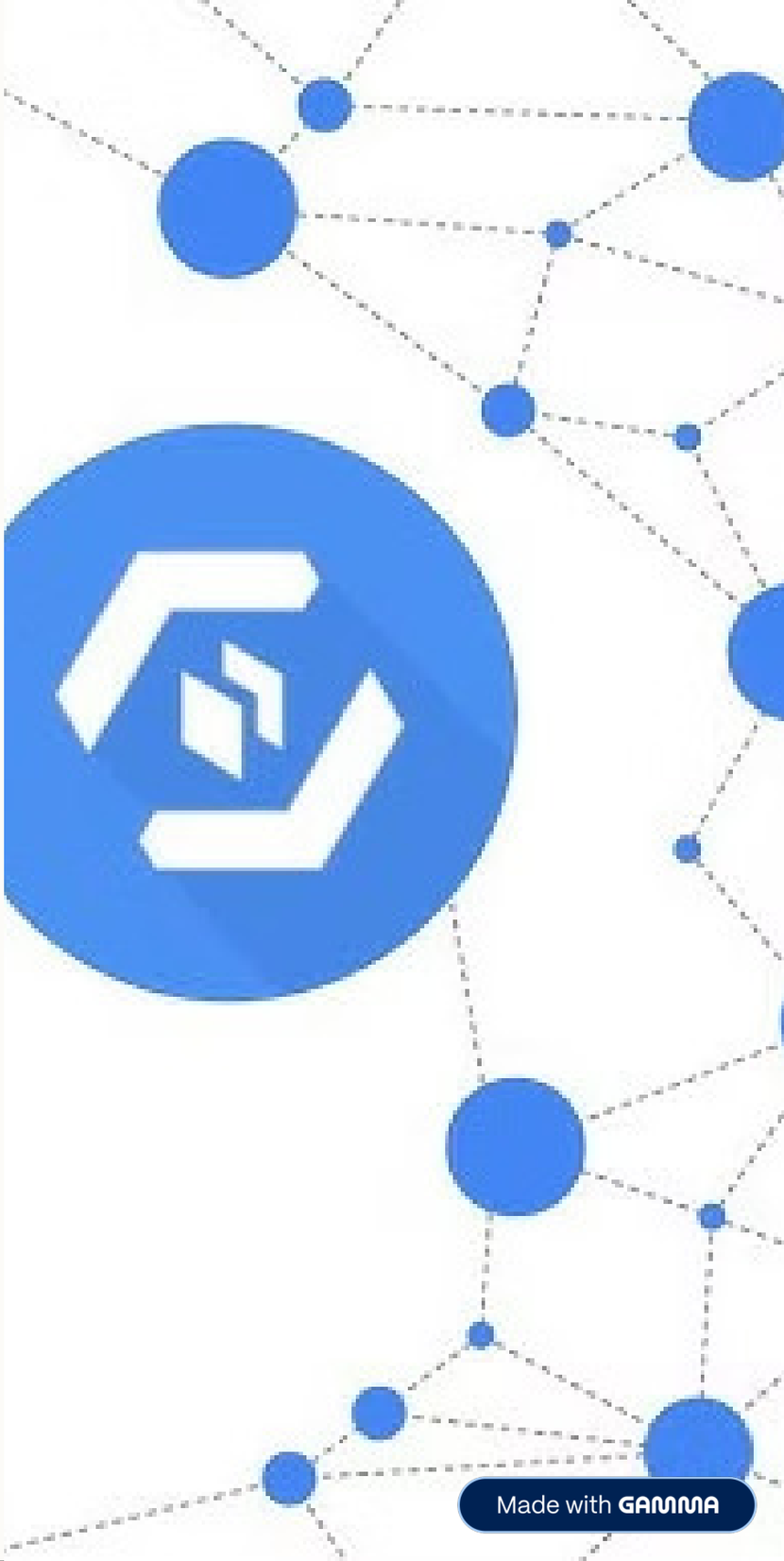
Roll No. - 32

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

- Data Cleaning
- Feature Selection
- Model Selection
- Parameter Optimization
- Model Validation
- Deployment
- Monitoring

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

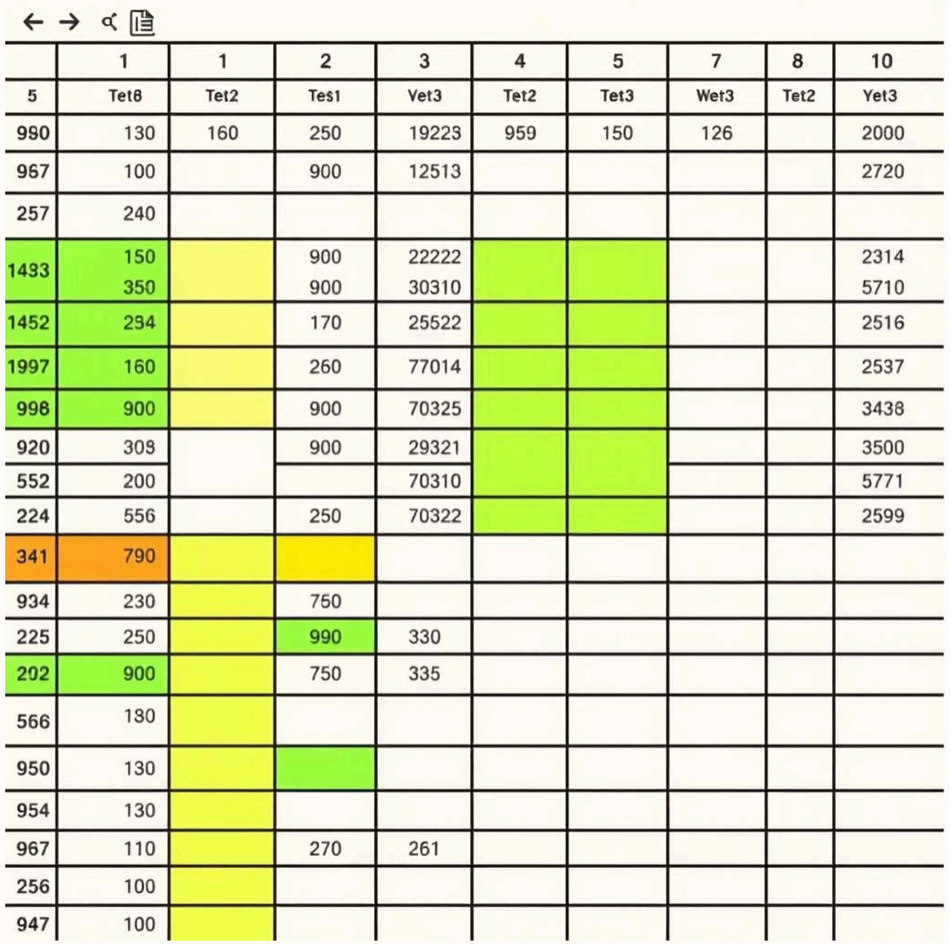
AutoML Vision (Example Focus)

📸 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)



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1452	234		170	25522					2516
1997	160		260	77014					2537
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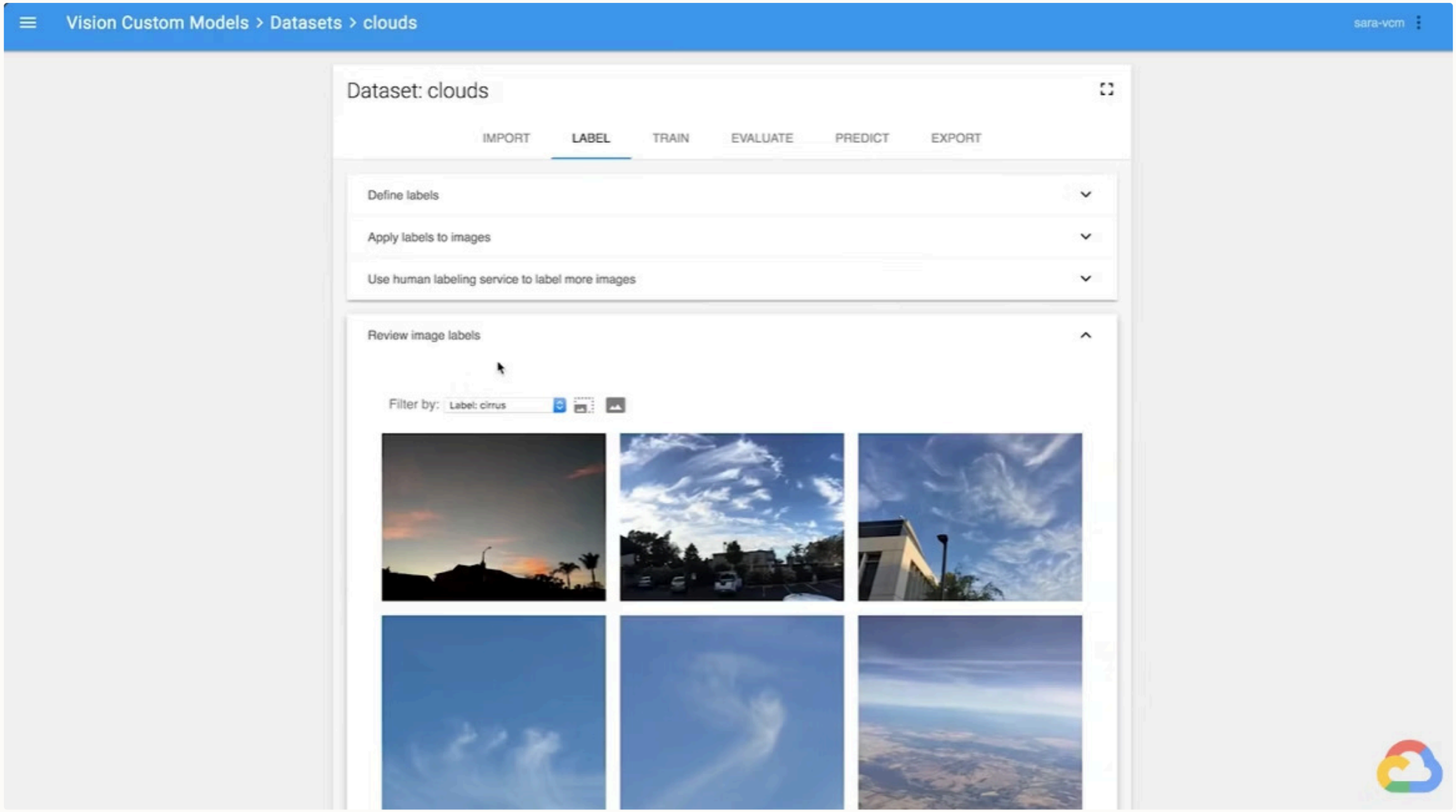
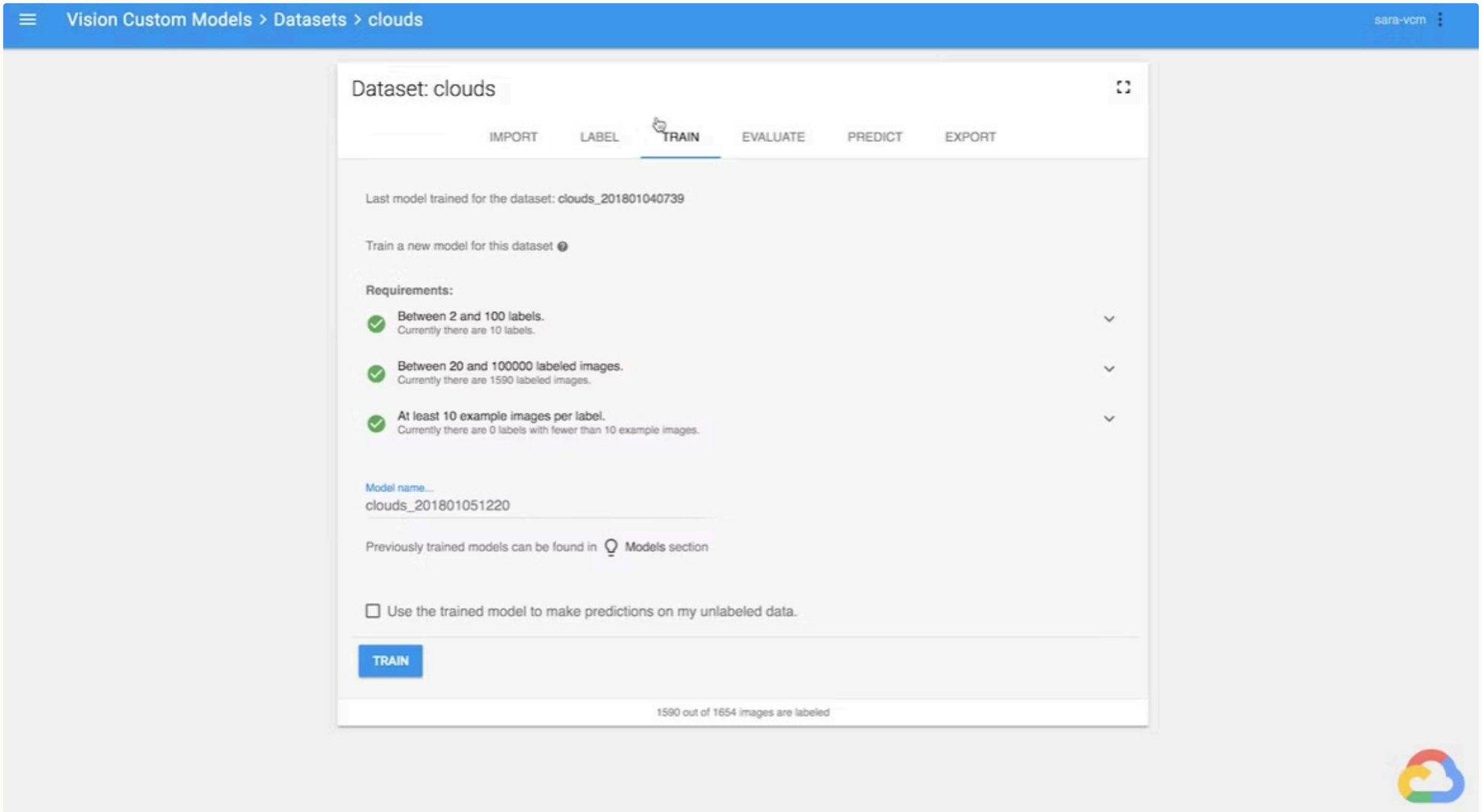
934	230		750						
225	250		990	330					
202	900		750	335					
566	180								
950	130								
954	130								
967	110		270	261					
256	100								
947	100								

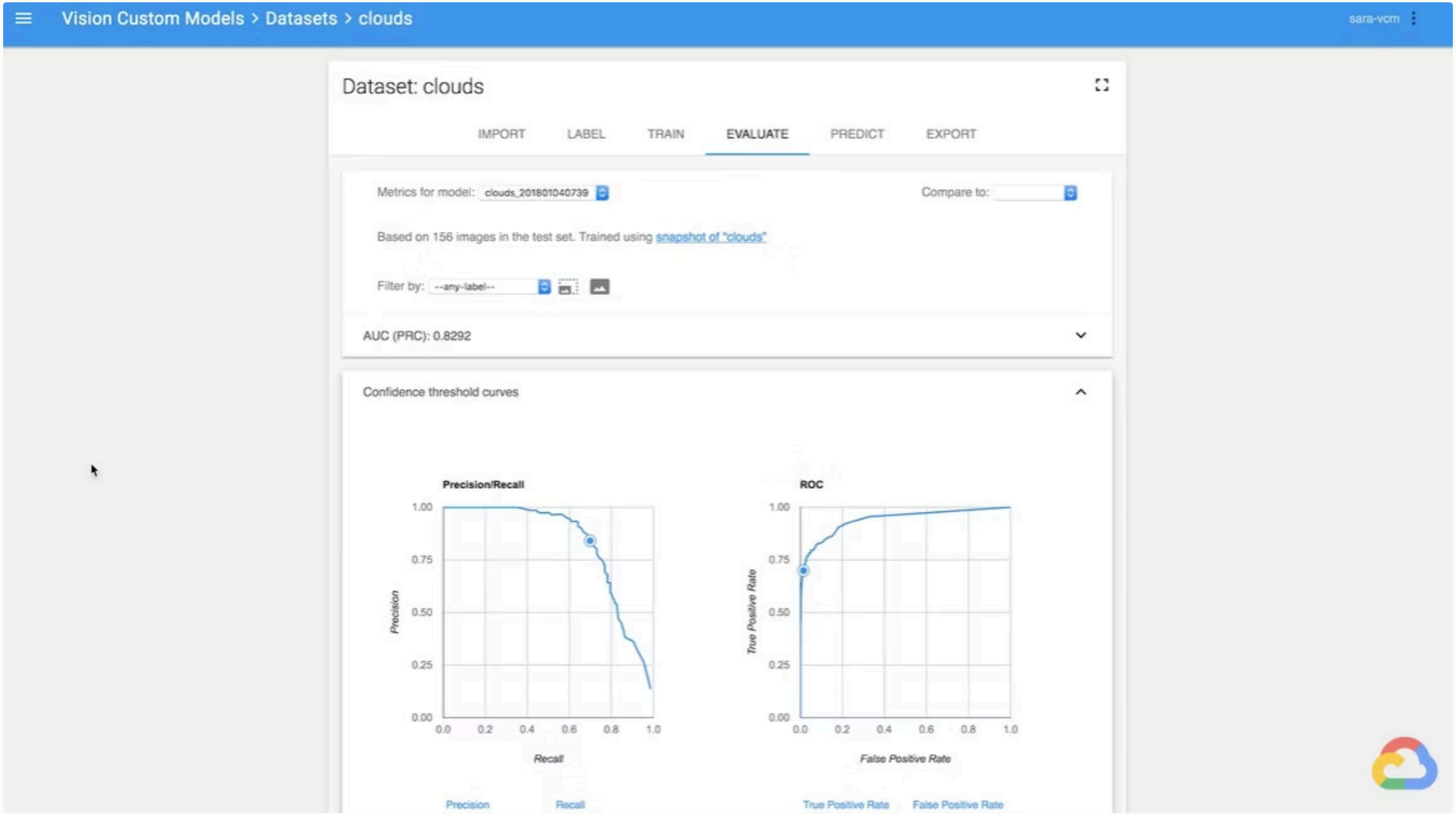
🗃️ **Upload structured data (like Excel/CSV).**

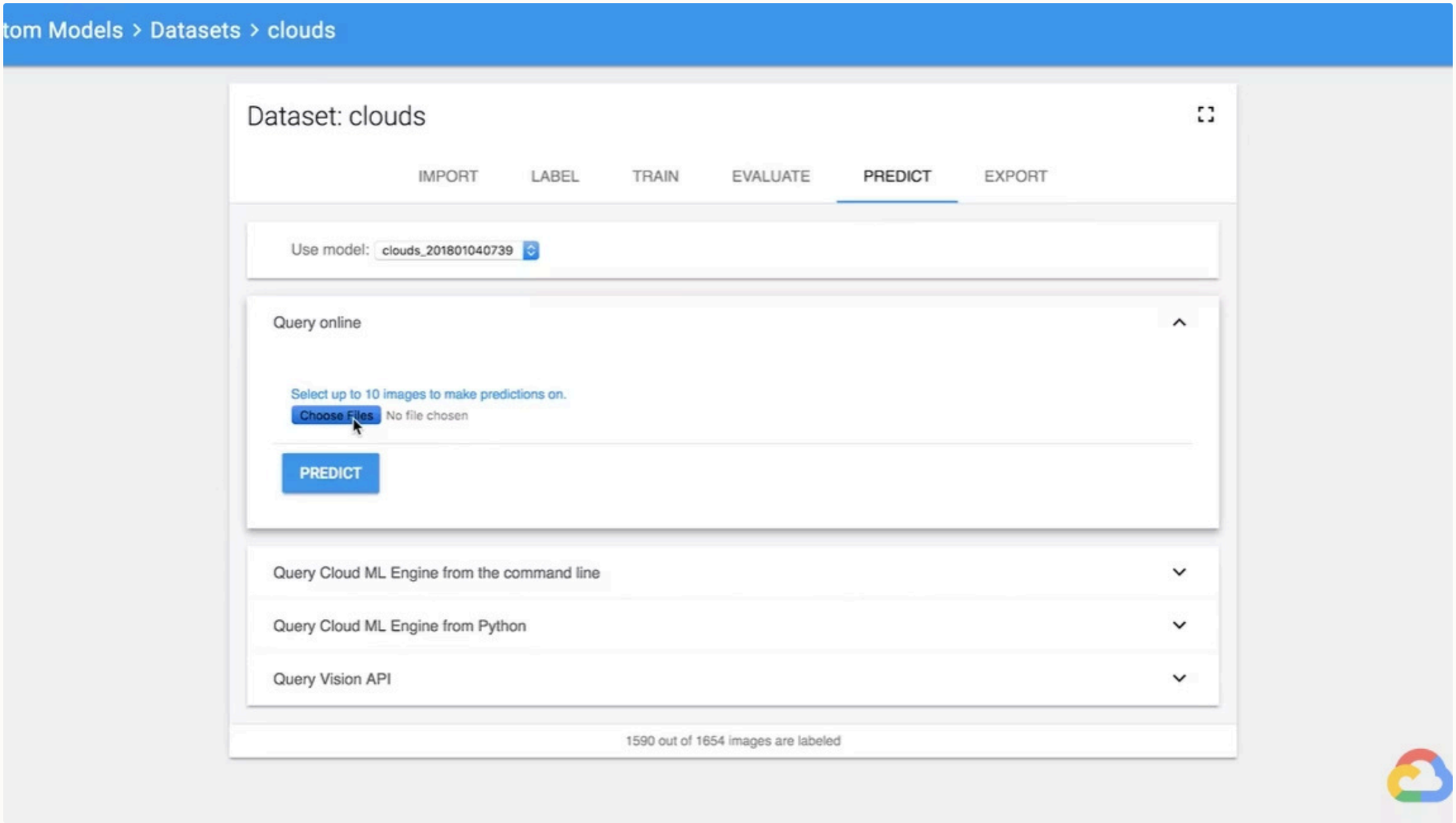
🤖 **AutoML builds a model to predict future values.**

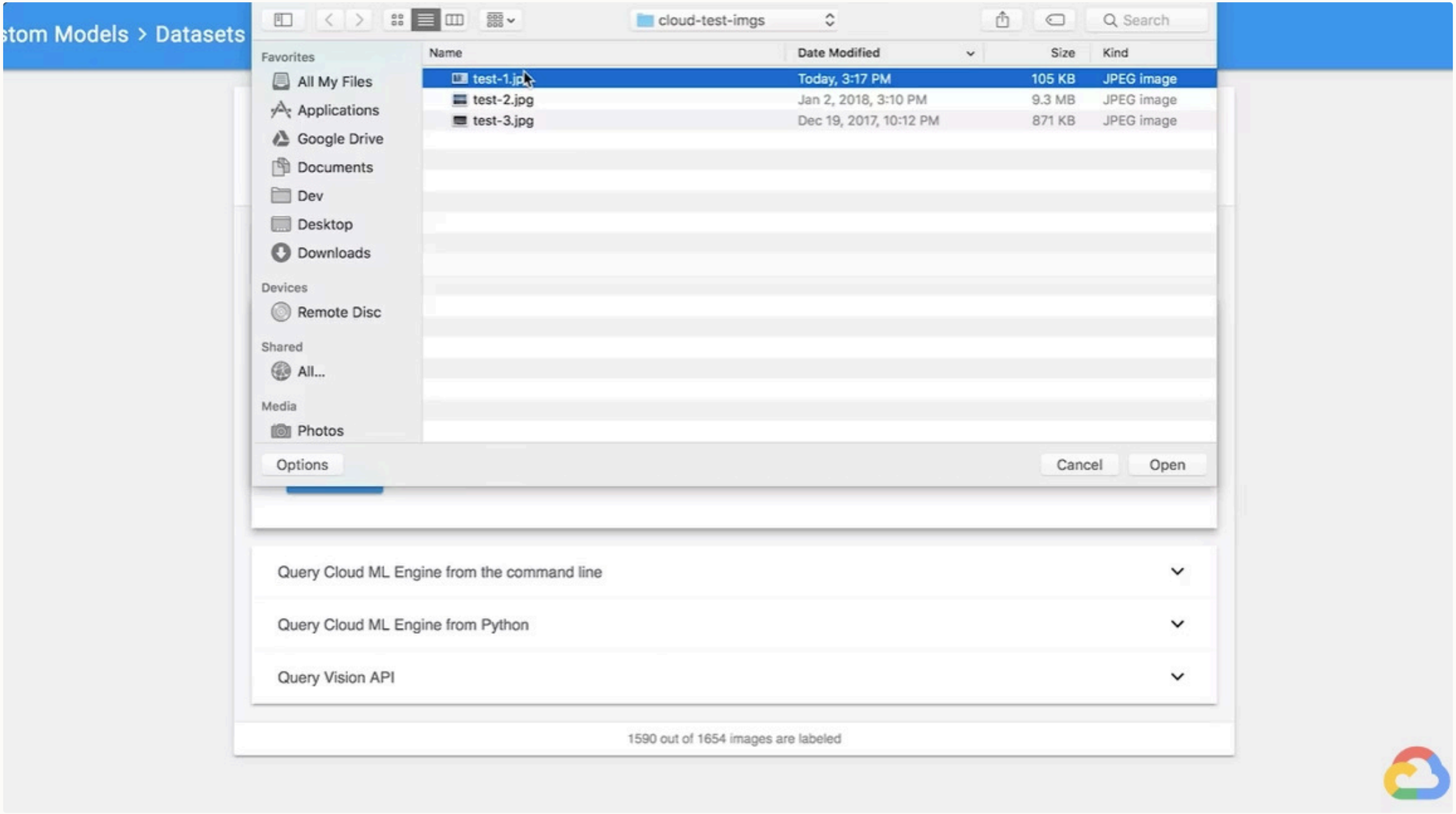
📊 Example: Predict student scores, sales growth, or customer churn.

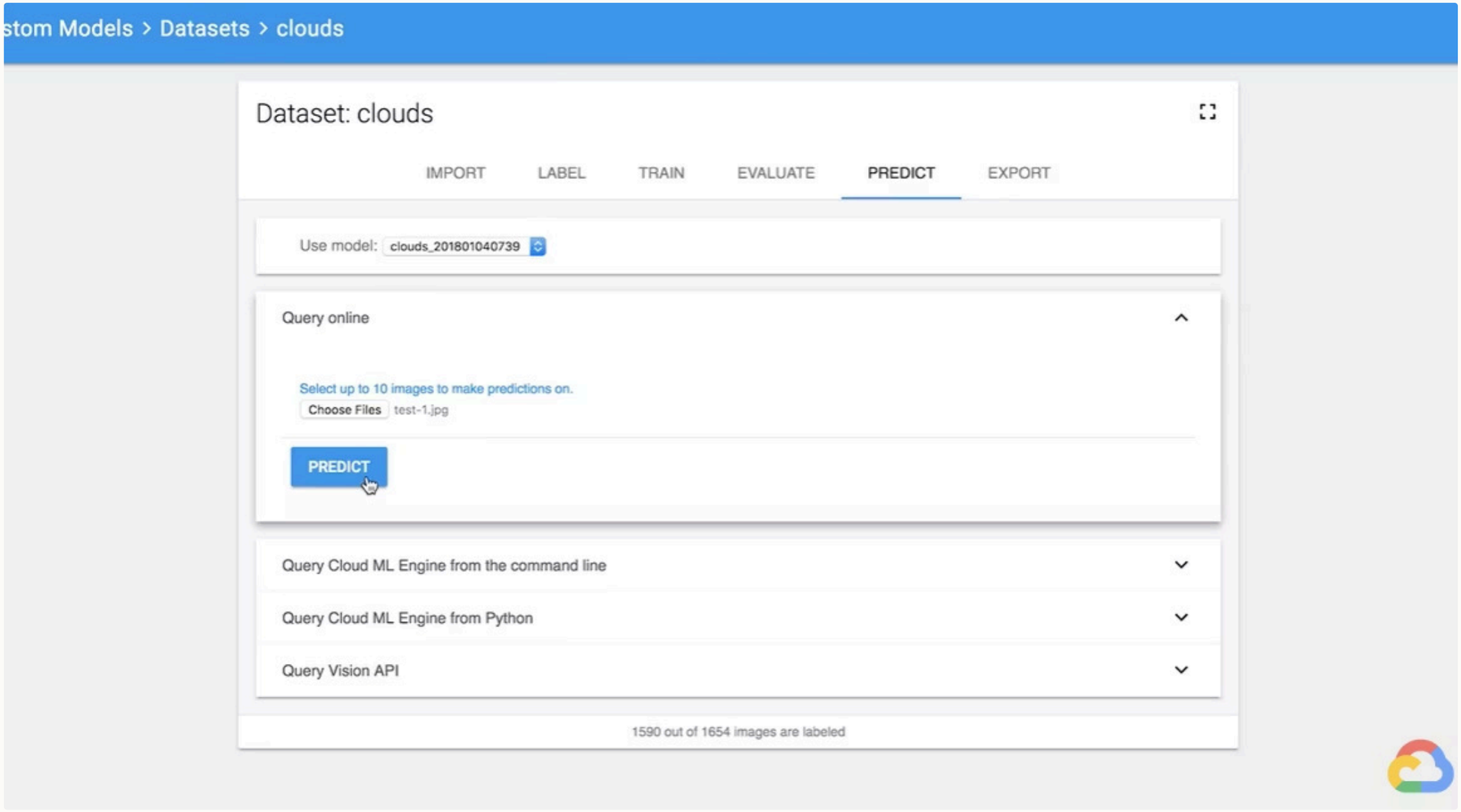












stom Models > Datasets > clouds

Dataset: clouds

IMPORT LABEL TRAIN EVALUATE PREDICT EXPORT

Query online

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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:**

Service	***Purpose***
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