

Appendix A

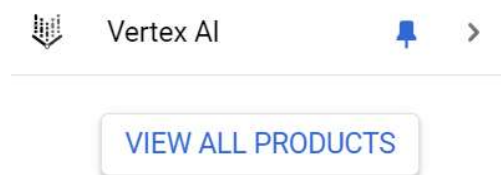
A Simple Guide on GCP Tools

How to Find the Tools

Sign up or Sign in to your Google Cloud Platform. Create a project or select an existing project first (nyc-ddc is our project name here). Then in your Google Cloud Platform Console, go to the right-upper corner, click the sidebar.



If you have already enabled the products/APIs you want, you can see them in the sidebar. Or click “View All Products” to search and enable them.



Document AI - Get Started

Find and enable the Document AI feature of GCP. Click “Create Custom Processor” to create a new processor, or you can click “Explore Processors” to use the existing models you created.

Get started with Document AI

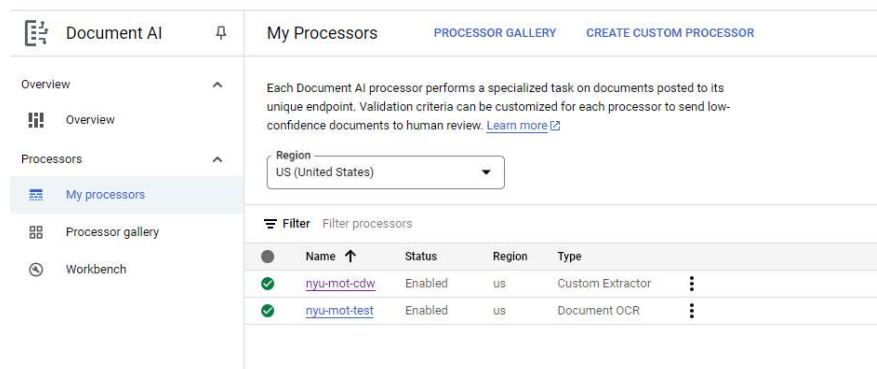
Document AI allows you to turn dark, unstructured documents into actionable data to increase operational efficiency, simplify business processes, and make better decisions.

[EXPLORE PROCESSORS](#)[CREATE CUSTOM PROCESSOR](#)

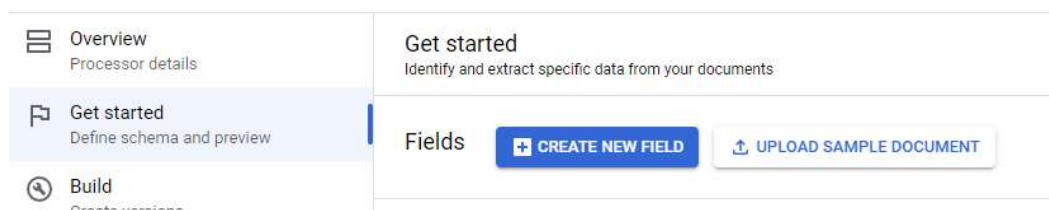
Check out our tutorials to learn how to train, evaluate, and deploy a Document AI processor or custom-built Workbench processor.

[VIEW TUTORIALS](#)

Select My processors in the sidebar, and select the corresponding processor in the filter. In this project, "nyu-mot-cdw" is our processor. You can create your own processor in the “Processor Gallery” tab in the sidebar.

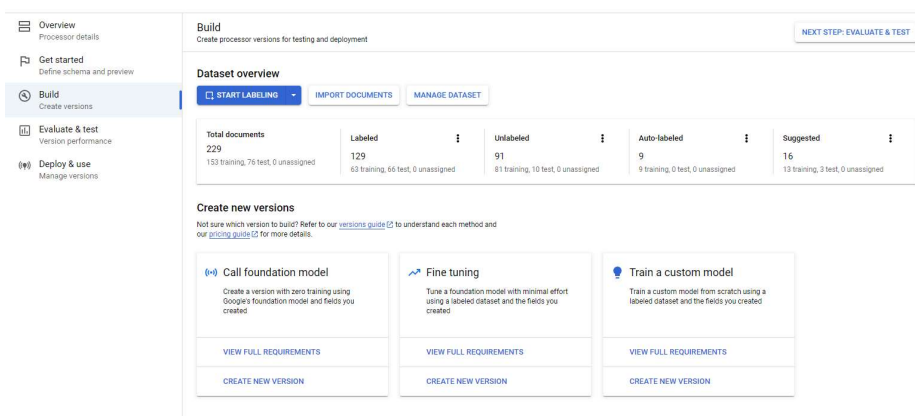


Find Get Started in the sidebar. You can click “Create New Field” to specify your fields, which are the information you want to extract from the documents. After you define the fields, you can upload the sample file to check your setting/schema.



Document AI - Build

The Build page is used to create our model for testing and deployment. You can upload your training data, which should be some documents here. And like most supervised models, you should do the labeling.



In the “MANAGE DATASET”, you can manage your dataset, do the labeling, upload more documents, and train your model.

Training



cdw-processor-ft-v013
Average F1 score: 0.836

TRAIN NEW VERSION

The screenshot displays the Google Cloud AI Platform interface. On the left, a dataset named '4A-544_Carver_Sand_8_Gravel_cdd.2021-03AC.wtd' is shown with various fields like generator_address, generator_city, generator_name, generator_state, generator_zip, pickup_address, pickup_city, pickup_name, pickup_state, pickup_zip, receiving_address, receiving_city, receiving_name, receiving_state, receiving_zip, and transporter_name. On the right, a sample document form titled 'Part 360 Series Waste Tracking Document - Construction & Demolition' is displayed, containing fields for waste quantity, location, generator information, and transporter details.

Document AI - Evaluate & Test

You can get an idea of the performance of models before deployment, including the F1 score, Precision, and Recall, all these shows the accuracy of your models.

Evaluate & test	
Understand your version performance prior to deployment and usage	
Version pretrained-foundation-model-v1.0-2023-08-22	VIEW FULL EVALUATION RUN NEW EVALUATION
Overview	
Name	Google Stable
Status	✓ Deployed
Type	Generative AI
Created	Aug 21, 2023, 8:00:00 PM
Last evaluated	Apr 22, 2024, 7:27:29 PM
Prediction endpoint	
F1 score	0.772
Precision	78.2%
Recall	76.4%

Document AI - Deploy & Use

You can train several versions for models. In this page, you can choose which version is your default version, and which you want to deploy for use, and which version you want to discard.

MANAGE VERSIONS

Your default version is managed by Google and is auto-upgraded at regular intervals. You will be notified prior to each upgrade.

Default version

pretrained-foundation-model-v1.0-2023-08-22

The default version is used to process documents posted to your processor's prediction endpoint URL.

[ABOUT GOOGLE UPGRADES](#)

[VIEW RELEASE NOTES](#)

Versions

DEPLOY

UNDEPLOY

COMPARE

IMPORT

Filter

Filter versions

Version ID

5adddebc313dad34

4c66853f0b7bb8ff

6323167dd7adb450

pretrained-foundation-model-v1.1-2024-03-12

pretrained-foundation-model-v1.0-2023-08-22

Created

Apr 27, 2024, 3:35:56 AM

Apr 22, 2024, 10:22:42 PM

Apr 22, 2024, 9:20:31 PM

Mar 11, 2024, 8:00:00 PM

Aug 21, 2023, 8:00:00 PM

Status

Undeployed

Undeployed

Undeployed

Deployed

Deployed

Name

cdw-processor-ftv013

cdw-processor-mb-v013

cdw-processor-tb-v001

Google Release Candidate

Google Stable

Type

Generative AI

Custom

Custom

Generative AI

Generative AI

F1 score

0.836

0.81

0.691

0.78

0.772

API

VIEW DETAILS

SAMPLE REQUEST

VIEW DETAILS

SAMPLE REQUEST

VIEW DETAILS

SAMPLE REQUEST

VIEW DETAILS

SAMPLE REQUEST

VIEW DETAILS

SAMPLE REQUEST

Document AI - How to Call it via API

First, check your access permission. In most cases, if you have the editor permission in your project, you will also have access to the products/APIs used in the project.

IAM & Admin

Marketplace

Compute Engine

IAM

PAM

NEW

Identity & Organization

prediction endp

<div></div>	<div>rm2429@nyu.edu</div>	<div>Ruoan Ni</div>	<div>Editor</div>	<div>8055/8173 excess permissions</div>	<div></div>
<div></div>	<div>rx2161@nyu.edu</div>	<div>Rui Xue</div>	<div>Editor</div>	<div>8095/8165 excess permissions</div>	<div></div>
<div></div>	<div>tf-admin@hpc-terraform-200211.iam.gserviceaccount.com</div>		<div>Owner</div>	<div>9329/9330 excess permissions</div>	<div></div>
<div></div>	<div>tw2709@nyu.edu</div>	<div>Tianyi Wu</div>	<div>Editor</div>	<div>7951/8168 excess permissions</div>	<div></div>

Permissions for tw2709@nyu.edu

Current permissions for Editor role	
132	documentai.processors.create
133	documentai.processors.delete
134	documentai.processors.fetchHumanReviewDetails
135	documentai.processors.get
136	documentai.processors.list
137	documentai.processors.processBatch
138	documentai.processors.processOnline
139	documentai.processors.update
140	documentai.processorTypes.get
141	documentai.processorTypes.list
142	documentai.processorVersions.create
143	documentai.processorVersions.delete
144	documentai.processorVersions.get
145	documentai.processorVersions.list
146	documentai.processorVersions.processBatch
147	documentai.processorVersions.processOnline
148	documentai.processorVersions.update
149	errorreporting.groups.list
150	iam.roles.list

Once you have confirmed that you have the permission to use Document AI, you should set up authentication in your work environment. The easiest way to do this is use Google Cloud CLI. You can download it here: [link](#).

Then, run the following command in your Command Prompt/Anaconda Prompt/Powershell Prompt :

```
gcloud init
```

And run this command to create local authentication credentials for your Google Account. You will be asked to enter your GCP account and password.

```
gcloud auth application-default login
```

Check these locations for the json file. If the json file exists, you successfully set up authentication.

Linux, macOS: \$HOME/.config/gcloud/application_default_credentials.json

Windows: %APPDATA%\gcloud\application_default_credentials.json

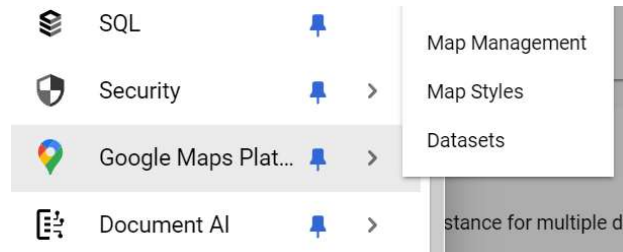
Now you can call Document AI, send it a request, use it to process your documents in your work environment, like your PC.

For code example, check : https://github.com/NYU-Tandon-TMI/cdw/blob/main/toolbox/document_extractor_one_folder.ipynb

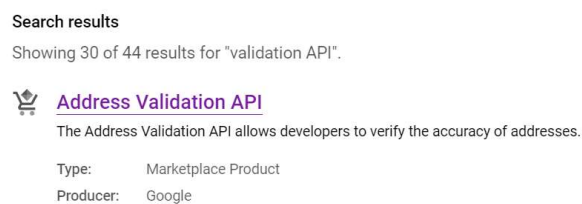
For more details, check: <https://cloud.google.com/document-ai/docs/>

Validation API

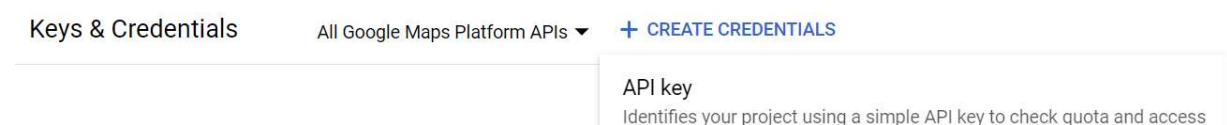
Validation API is among the numerous APIs & Services provided by Google Maps Platform. Similarly, find and enable Google Maps Platforms in the sidebar of your GCP console.



And go to the APIs & Services, find and enable Validation API



This API is easy to use. What you should do is create API keys, and put it in your request code.



For code example, check: https://github.com/NYU-Tandon-TMI/cdw/blob/main/toolbox/document_preprocess.ipynb

For more details, check: <https://developers.google.com/maps/documentation/Address-validation>