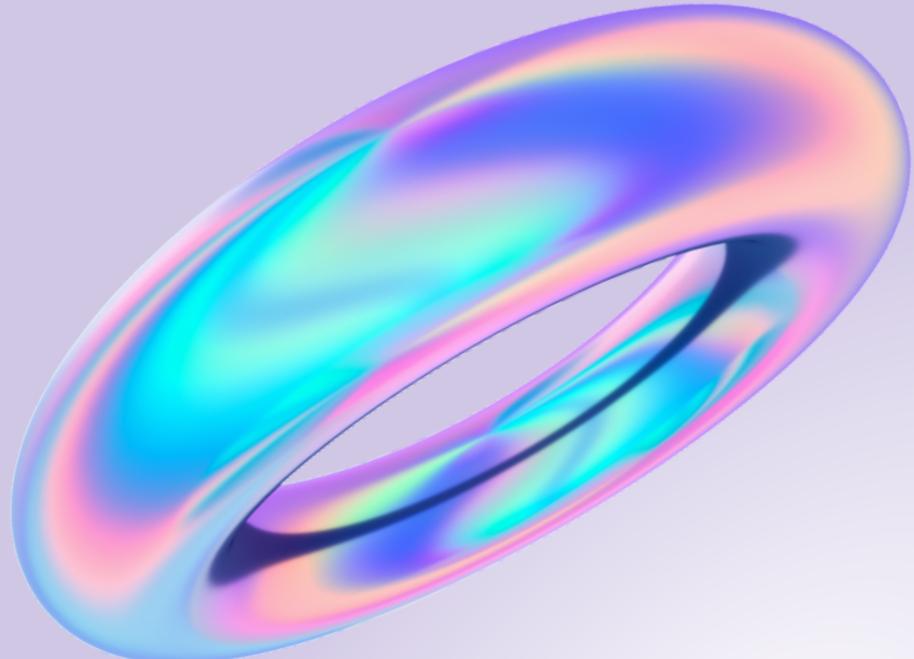




СтарГиги

GCCP PROJECT



Agenda

1

PROBLEM
STATEMENT

2

PROPOSED
SOLUTION

3

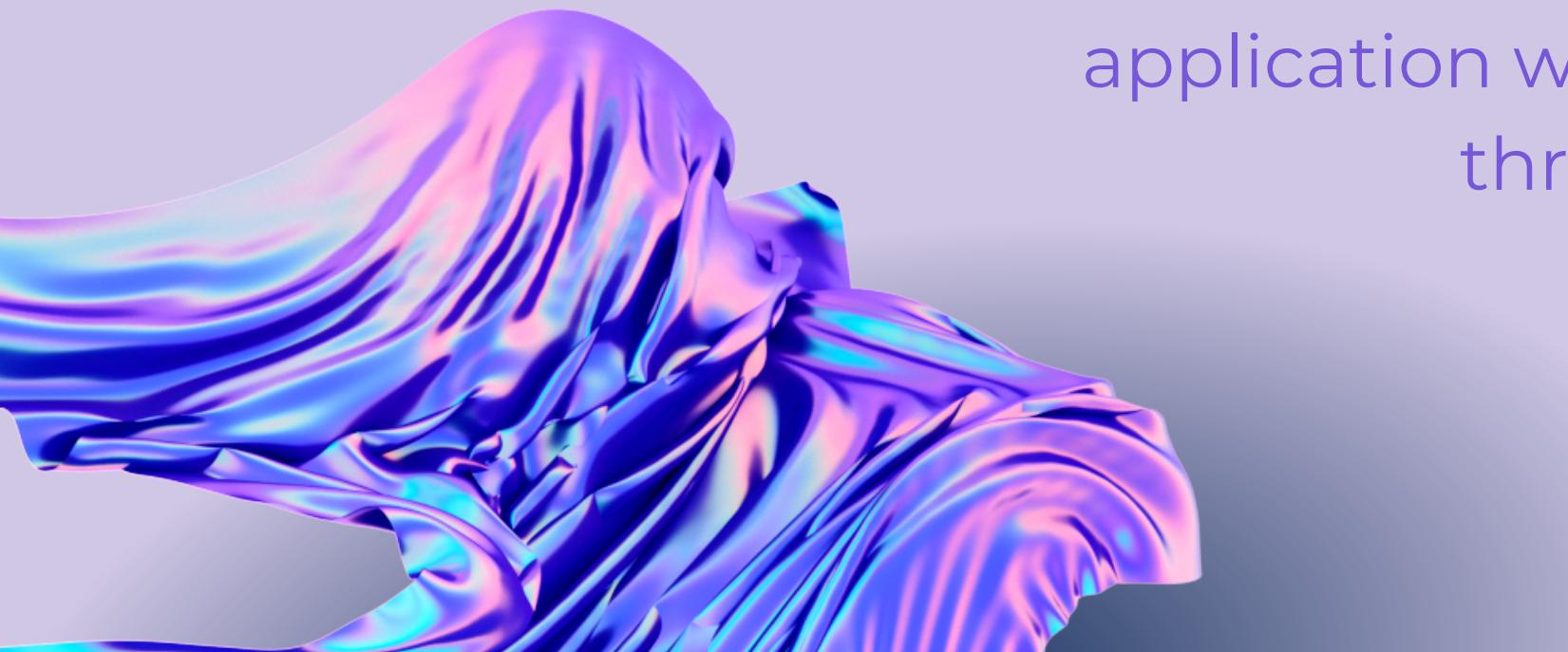
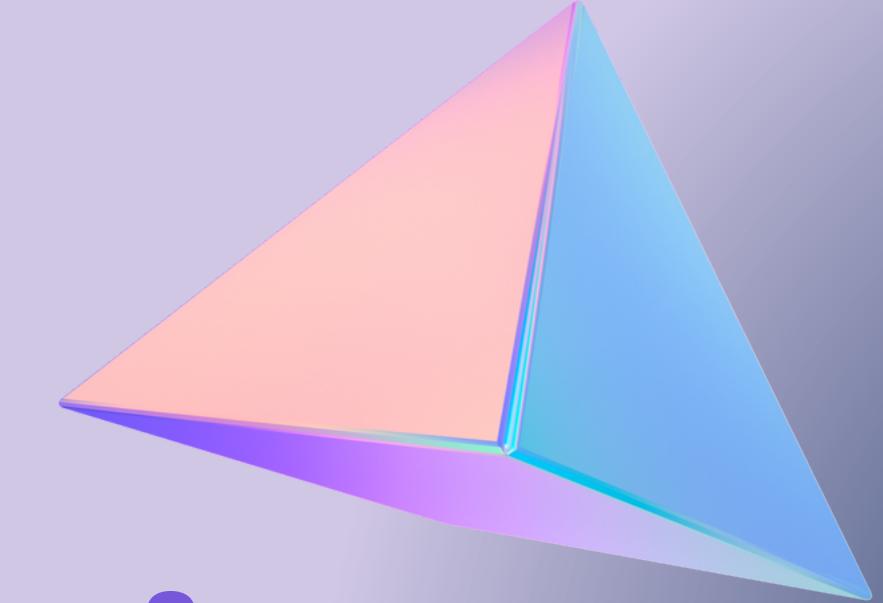
DEPLOYMENT

Problem Statement

India is one of the greatest waste generators in the world. It generates around 62 million tonnes of waste annually, of which only 12 million are treated. The percentage of waste that is treated is extremely low due to the lack of segregation of waste. It was found that less than 10% of waste generators segregate waste at the source. This leads to ineffective waste management and creates a hazard for the future generation.

Proposed Solution

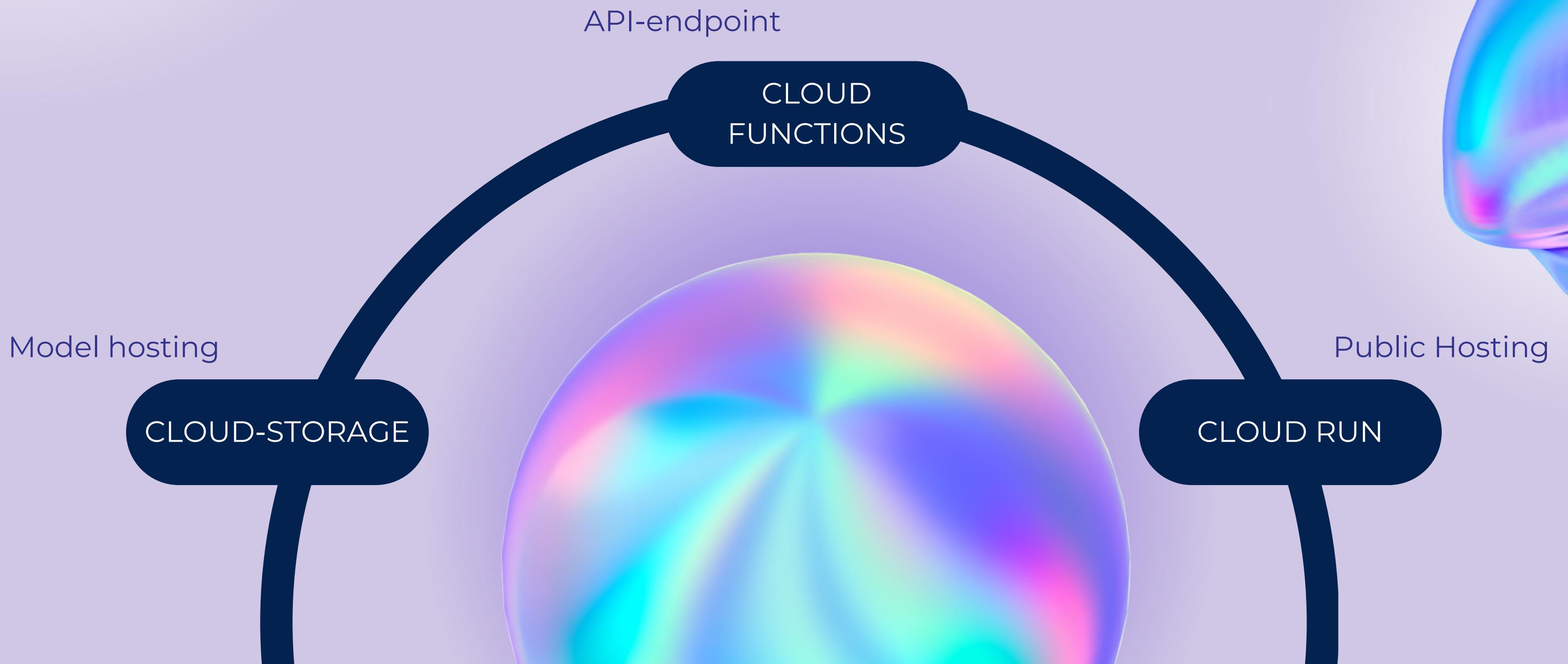
We aim to implement waste segregation at source by developing an application that will help classify the type of waste with just the snap of a picture. The application will be exposed to the public through Cloud Run.



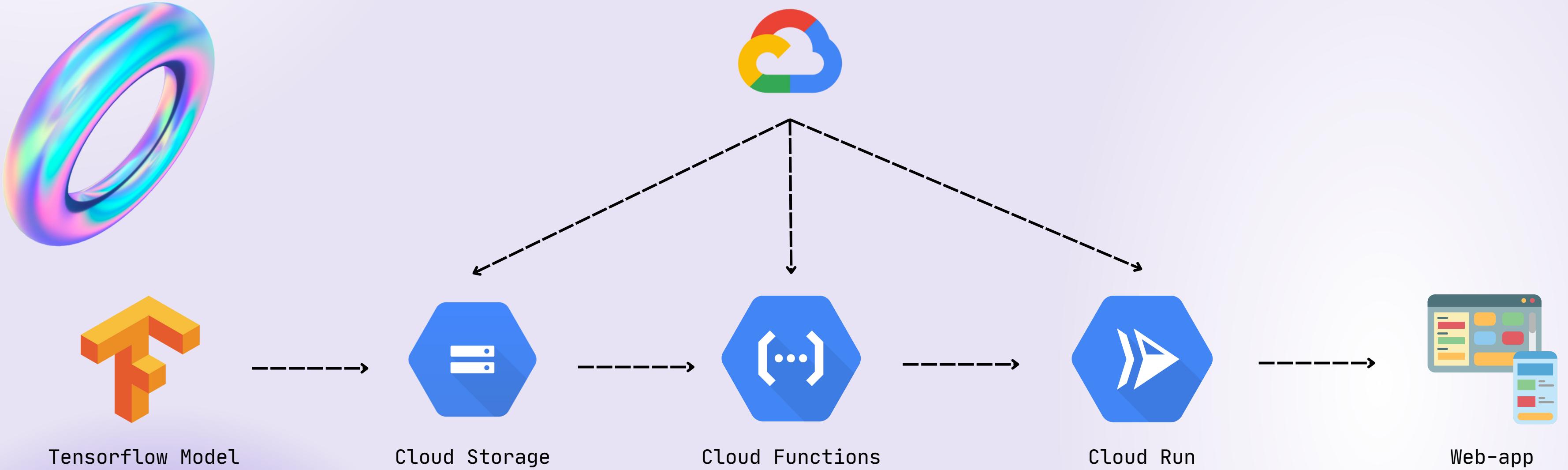
Detailed Solution:

- Images of both bio-degradable and non-biodegradable waste will be exposed to a collection of pre-trained networks(VGG-19, VGG-16, ResNet.etc)
- The Network with the best result will be chosen for fine-tuning.
- The Network will be fine-tuned on a dataset of over 100K images.
- Deep-Learning framework of choice: TensorFlow
- The User-Interface for the application will be built using Stream-lit.
- The Application will be deployed on Cloud Run
- Depending on time constraints the model can also be deployed as an API endpoint using Cloud Functions.

DEPLOYMENT



PRODUCT PIPELINE



Cloud Storage



Google Cloud My First Project Search (/) for resources, docs, products, and more Search

Cloud Storage Bucket details thecrabbucket REFRESH HELP ASSIST.

Buckets Monitoring NEW Settings

the_crabbucket

Location us (multiple regions in United States) Storage class Standard Public access Not public Protection None

OBJECTS CONFIGURATION PERMISSIONS PROTECTION LIFECYCLE OBSERVABILITY NEW

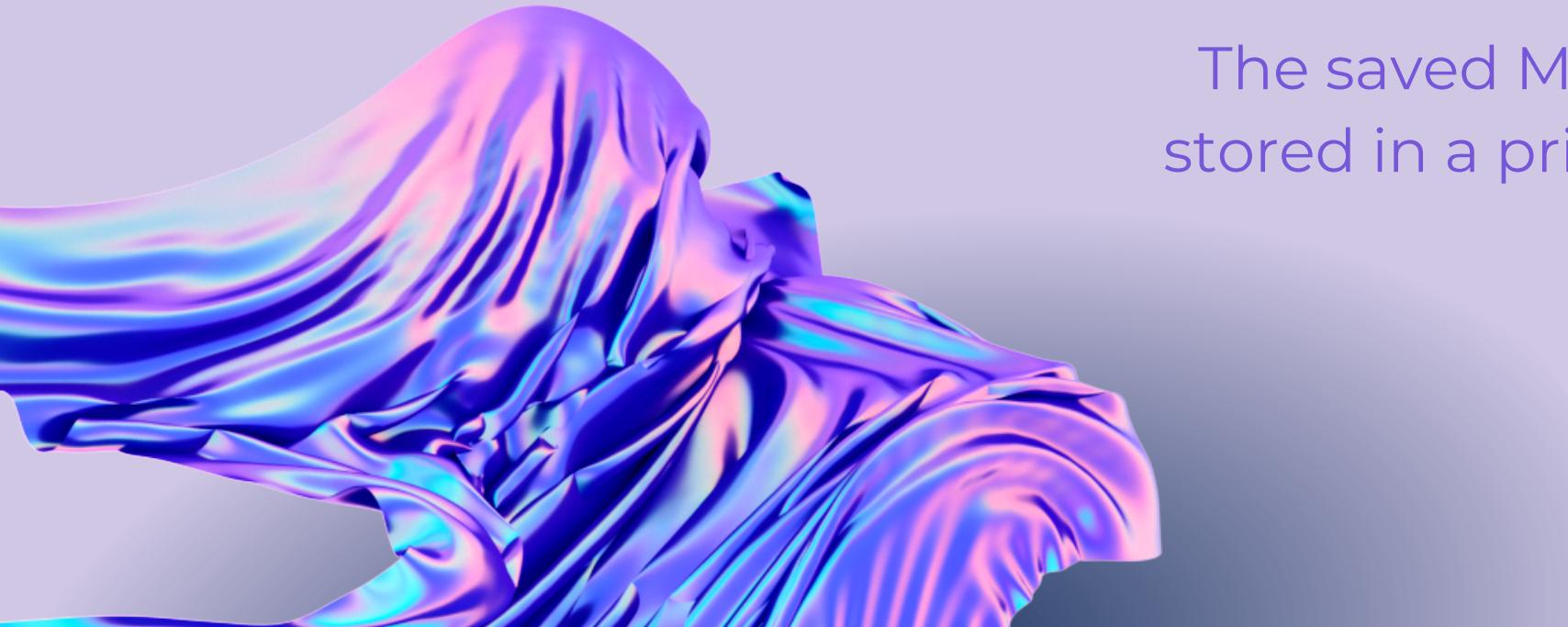
Buckets > thecrabbucket > tfmodels

UPLOAD FILES UPLOAD FOLDER CREATE FOLDER TRANSFER DATA MANAGE HOLDS DOWNLOAD DELETE

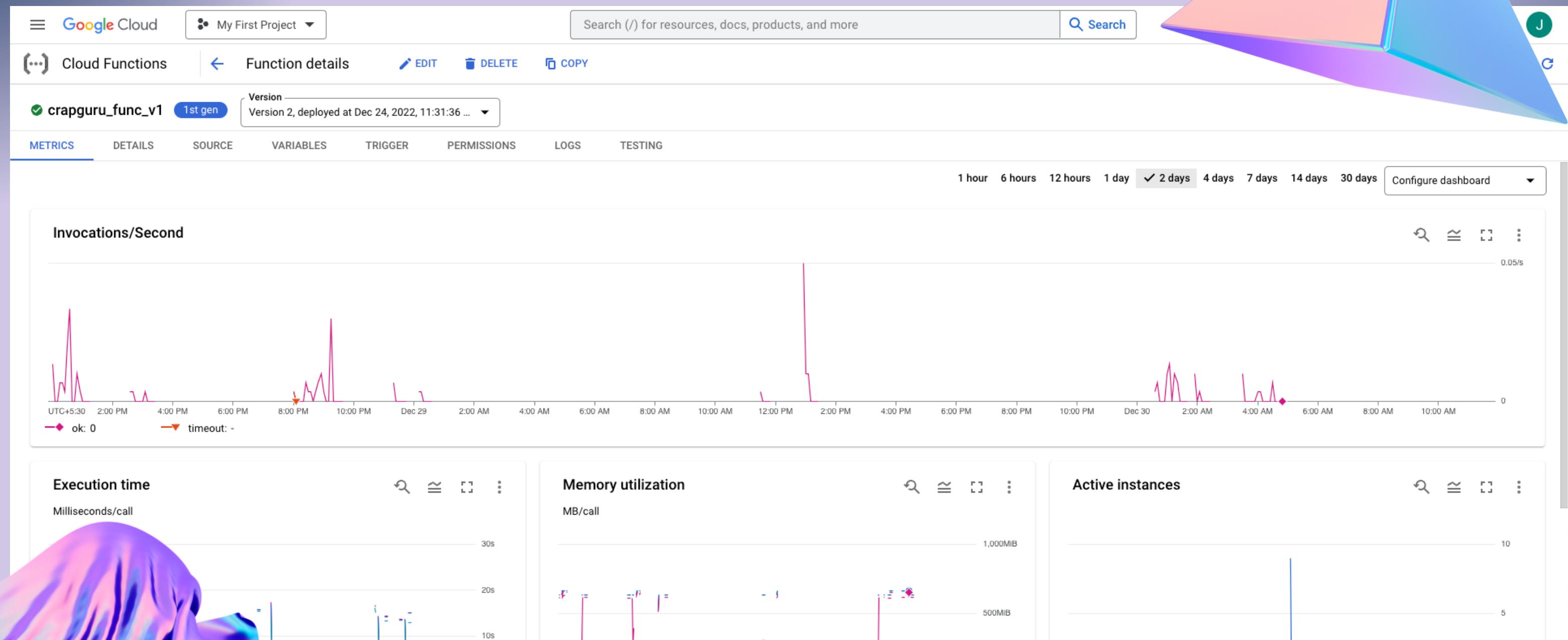
Filter by name prefix only Filter objects and folders Show deleted data

Name	Size	Type	Created	Storage class	Last modified	Public access	Version history	Encryption	Retention expiration
mobilenet_finetune.h5	23.3 MB	application/octet-stream	Dec 24, 2022, 10:52:19 PM	Standard	Dec 24, 2022, 10:52:19 PM	Not public	-	Google-managed key	-

The saved Machine Learning Model is stored in a private cloud storage bucket

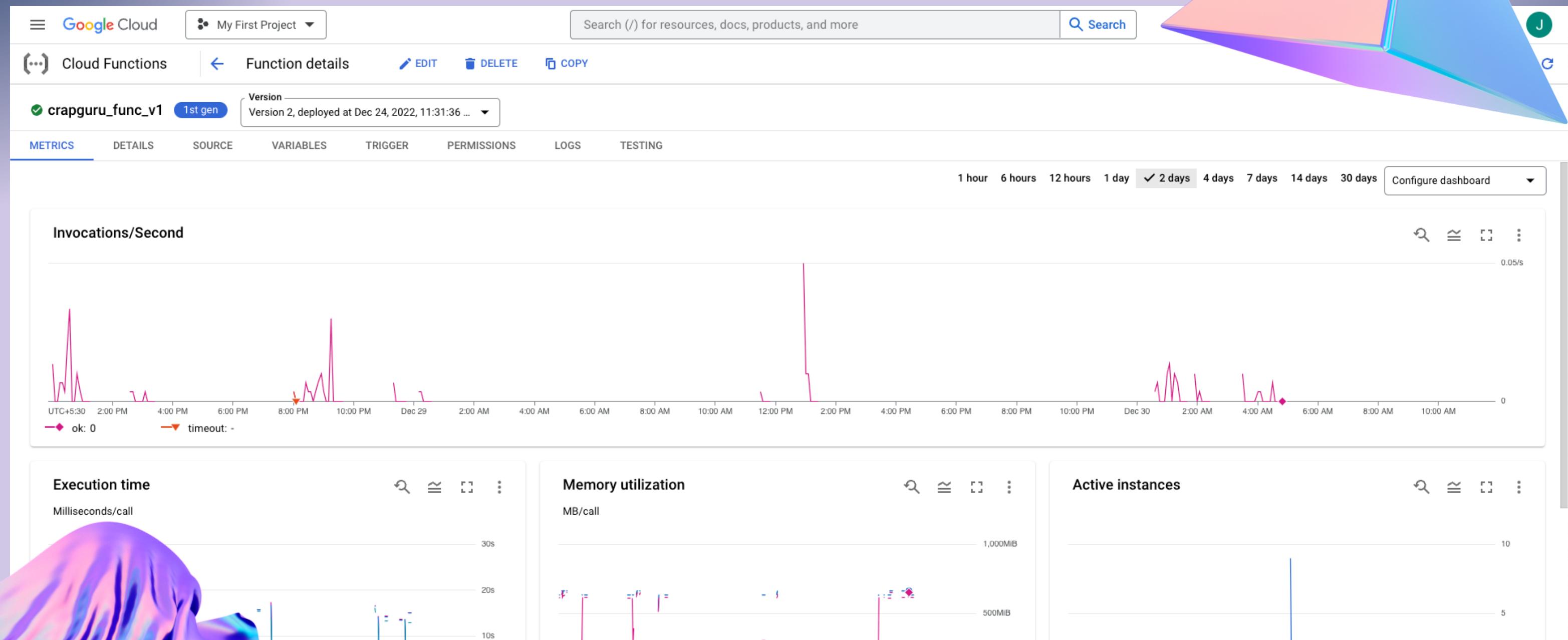


Cloud Functions



The Model is hosted as a JSON API-endpoint
using cloud functions

Cloud Functions



The Model is hosted as a JSON API-endpoint
using cloud functions

Cloud Functions

```
url='https://us-central1-global-snow-372118.cloudfunctions.net/crapguru_func_v1'
payload = json.dumps({"instances": img.tolist()})
headers = {'Content-type': 'application/json'}
response = requests.post(url, data=payload, headers=headers)
result = response.json()
predictions = result["predictions"]

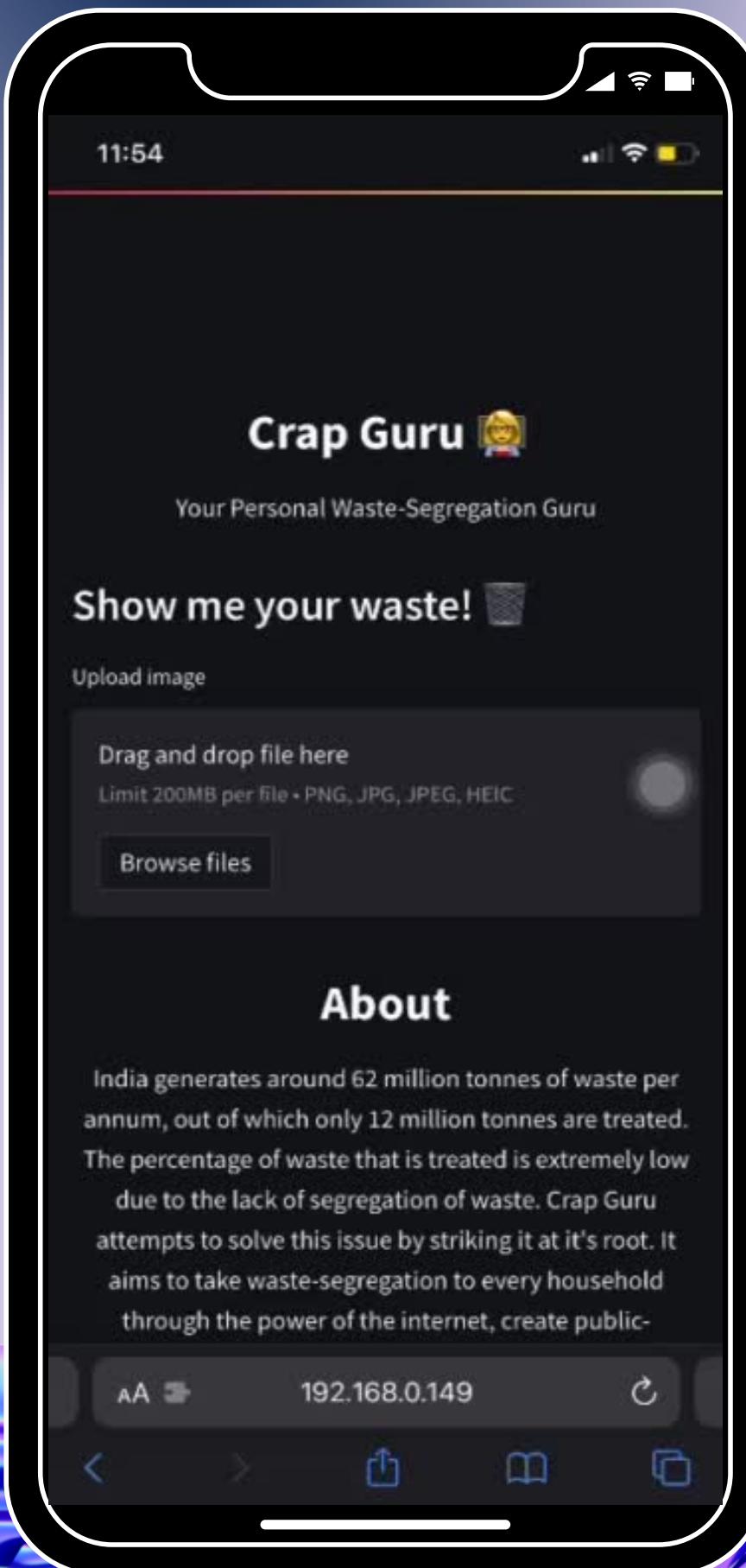
✓ 9.2s

response
✓ 0.2s
<Response [200]>

result.json()
✓ 0.6s
{'predictions': 1}
```

JSON output from cloud functions

Cloud Run



Team



Jesher Joshua M



Ankith Motha



Muralidharan

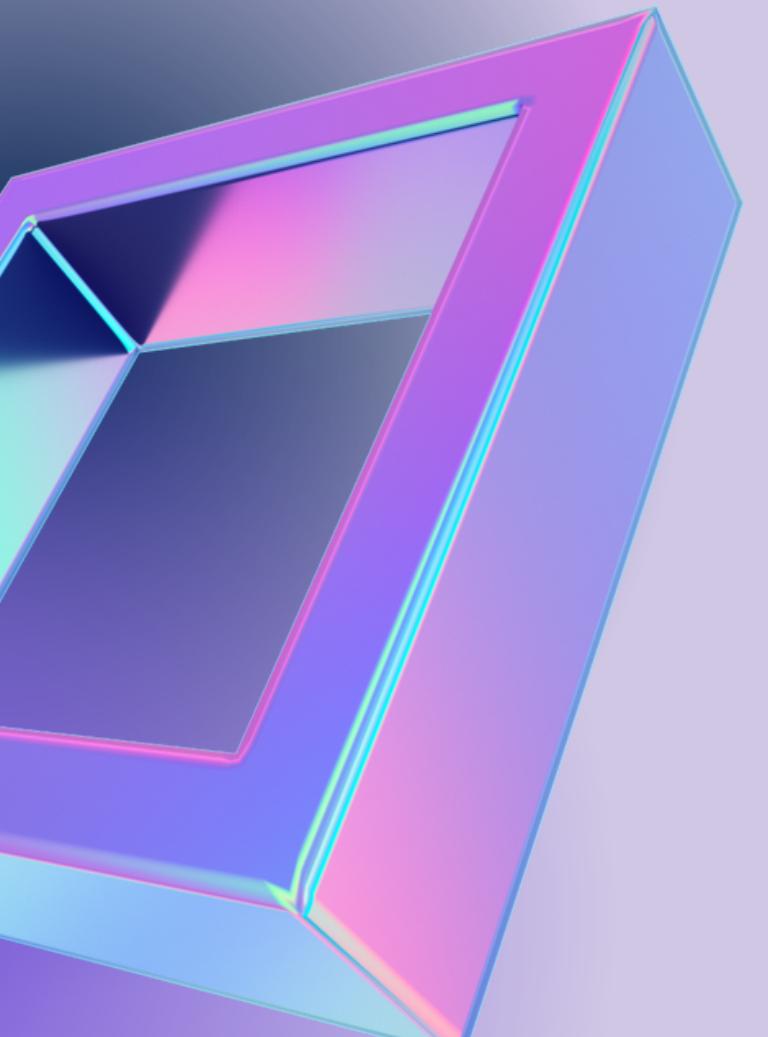


Tejaswini Thota



Reuben Stephen
John

Teamwork is Dream work!



Thank You!