UPS TECHNOLOGY GROUP

Hackathon 2024

Team 2: Next-Day Ninjas

8/1/2024

Introductions

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Agenda

- Project Summary
- Technical
- Business
- Demonstration
- Q&A

Project Summary

Overview

The Problem

- UPS faces challenges with the accuracy of feeder trailer and asset tracking, including identification of asset numbers, logos, and locations.

The Solution

- The implementation of property cameras combined with AI technology could enhance information identification, increase automation, and improve efficiency. The existing camera infrastructure, utilizing AI, could assist in identifying trailer numbers and markers to accurately pinpoint vehicles.

Project Category

- Supply Chain and Transportation Network

Solution

Technical

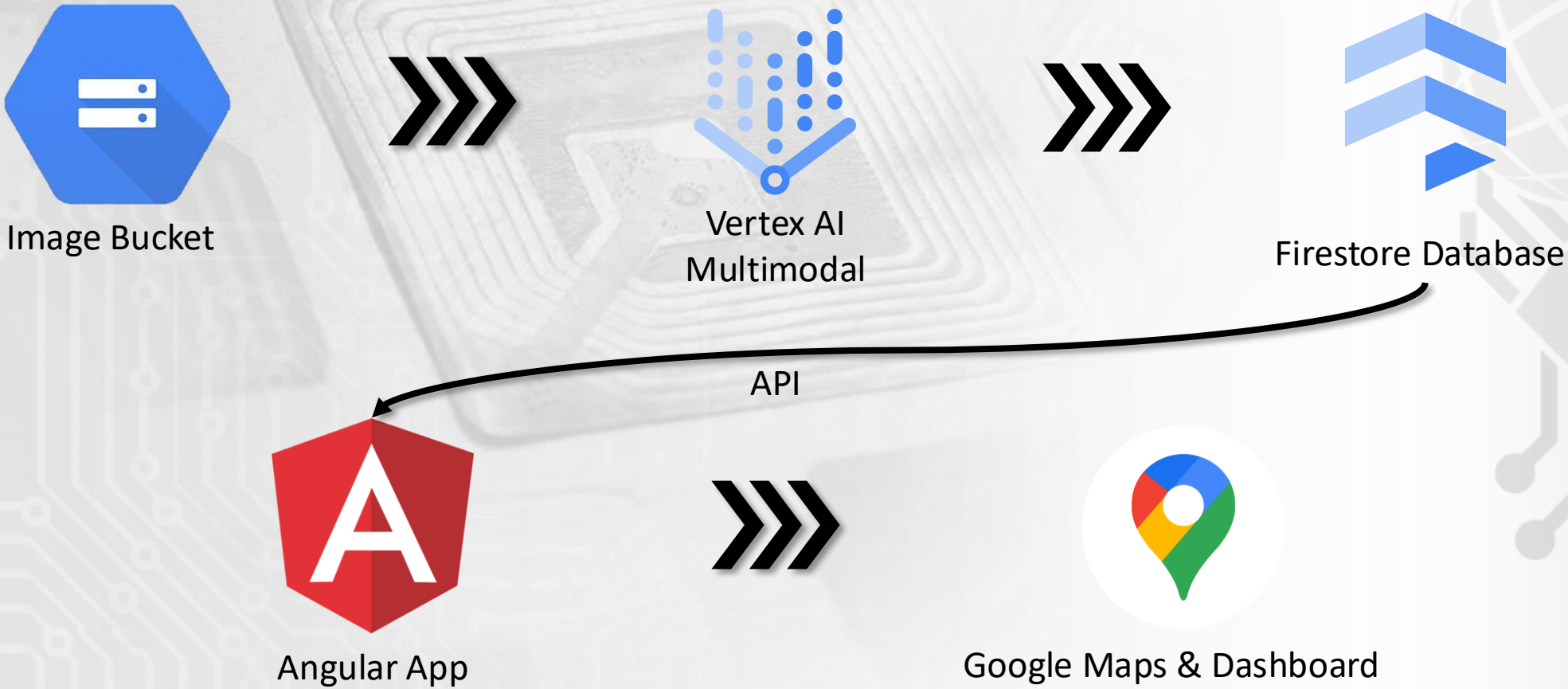
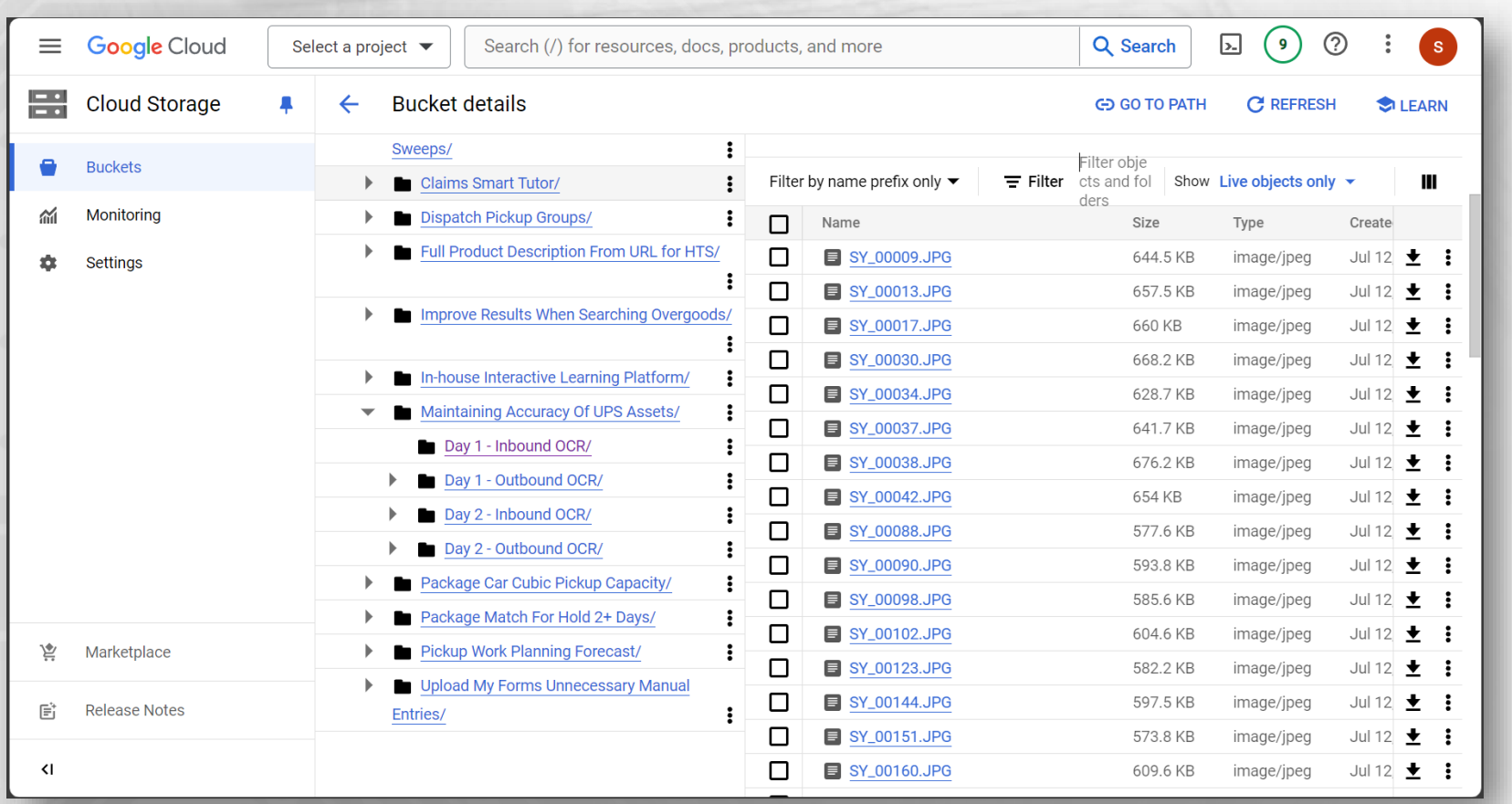


Image Bucket



Vertex AI Multimodal Model

vertexaiAPI > JS index.js > ...

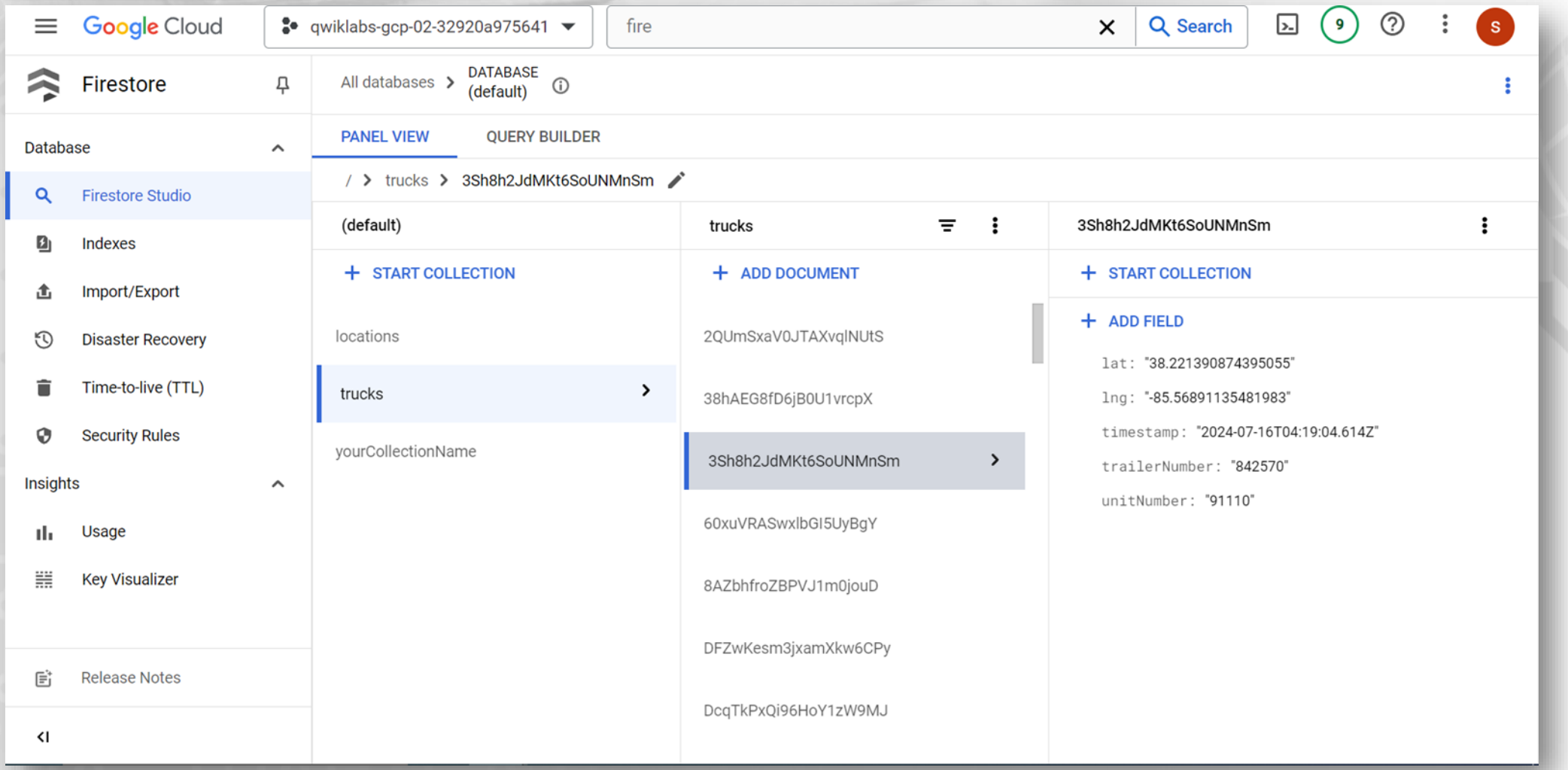
```
22  functions.cloudEvent('cloudStorageTrigger', async (cloudEvent) => {
31    await multiPartContent(file);
32  })
33
34  const vertexAI = new VertexAI({ project: project, location: location });
35
36  // Instantiate Gemini models
37  const generativeModel = vertexAI.getGenerativeModel({
38    model: textModel,
39    safetySettings: [{ category: HarmCategory.HARM_CATEGORY_DANGEROUS_CONTENT, threshold: HarmBlockThreshold.BLOCK_MEDI
40    generationConfig: { maxOutputTokens: 256 },
41  });
42
43  const generativeVisionModel = vertexAI.getGenerativeModel({
44    model: visionModel,
45  });
46
47  const generativeModelPreview = vertexAI.preview.getGenerativeModel({
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS COMMENTS

powershell...
bash
powershell...

```
3Sh8h2JdMKt6SoUNMnSm => {
  trailerNumber: '842570',
  unitNumber: '91110',
  timestamp: '2024-07-16T04:19:04.614Z',
  lat: '38.221390874395055',
  lng: '-85.56891135481983'
}
60xuVRASwxlbGI5UyBgY => {
  trailerNumber: '53102',
  unitNumber: '238441',
  timestamp: '2024-07-16T04:19:40.027Z',
  lat: '38.22136137340717',
  lng: '-85.56893817690752'
}
8AZbhfroZBPVJ1m0jouD => {
```

Firestore Database



NestJS API

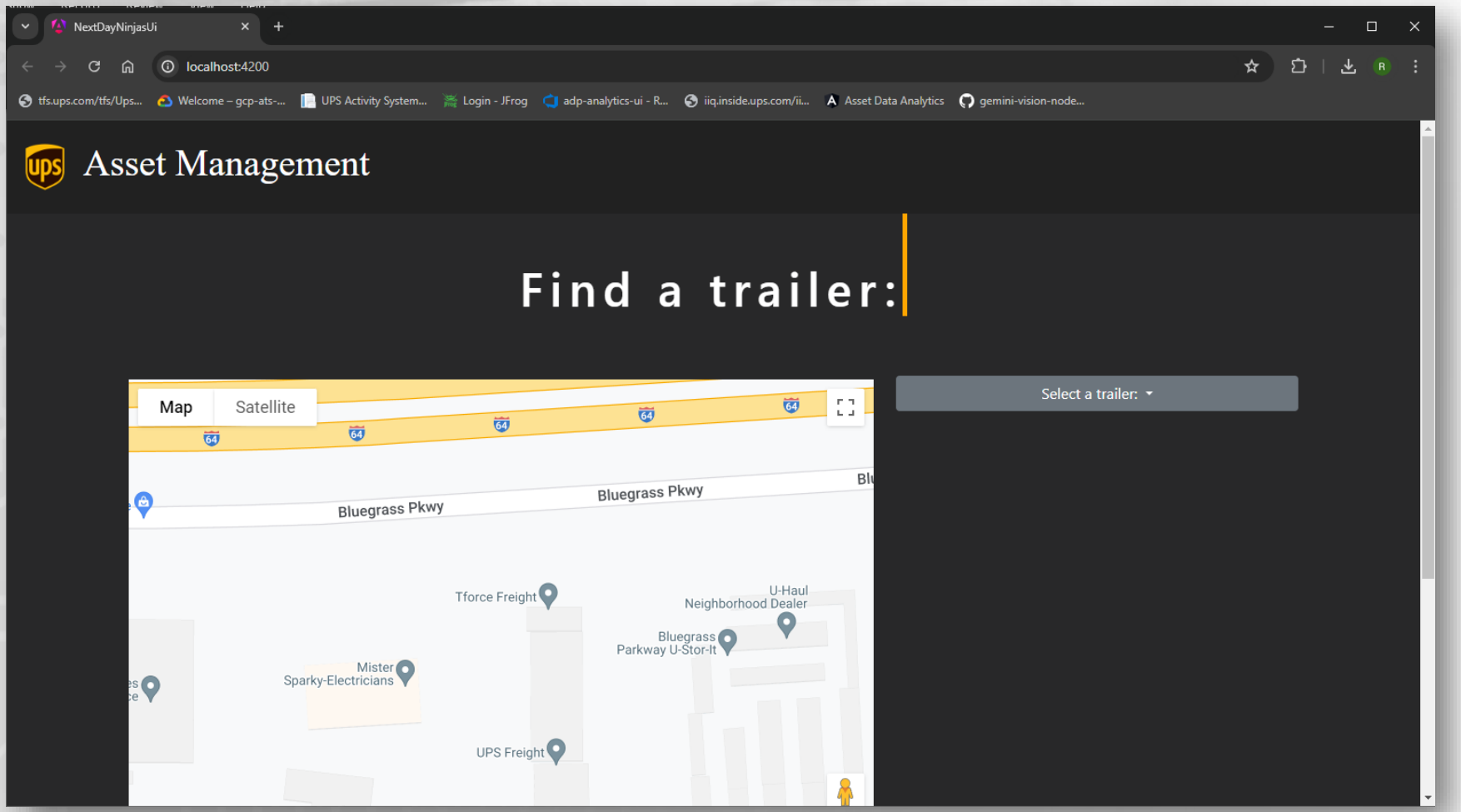
TS app.controller.ts

Next-Day-Ninjas > nest-day-ninja-api > src > TS app.controller.ts > ...

```ts
import { Body, Controller, Get, Param, Post } from "@nestjs/common";
import { AppService } from './app.service';
import { Location } from './models/models';

@Controller()
export class AppController {
  constructor(private readonly appService: AppService) {}

  @Get('/getTruckData')
  getTruckData(){
    return this.appService.getTruckData();
  }

  @Get('/getEquipmentData')

  getLocationData( @Param("trailerNum") trailerNum: string){
    return this.appService.getLocationData(trailerNum);
  }

  @Post('/addLocationData')
  addLocationData (@Body() body: Location){
    return this.appService.addLocationData(body.lat, body.lgt, body.trailerNum);
  }

}

```

Nest JS

Angular App with Google Maps Dashboard



Solution

Business

Reduces the need for manual data entry of asset locations

Enhances accuracy of known assets by removing risk of human error

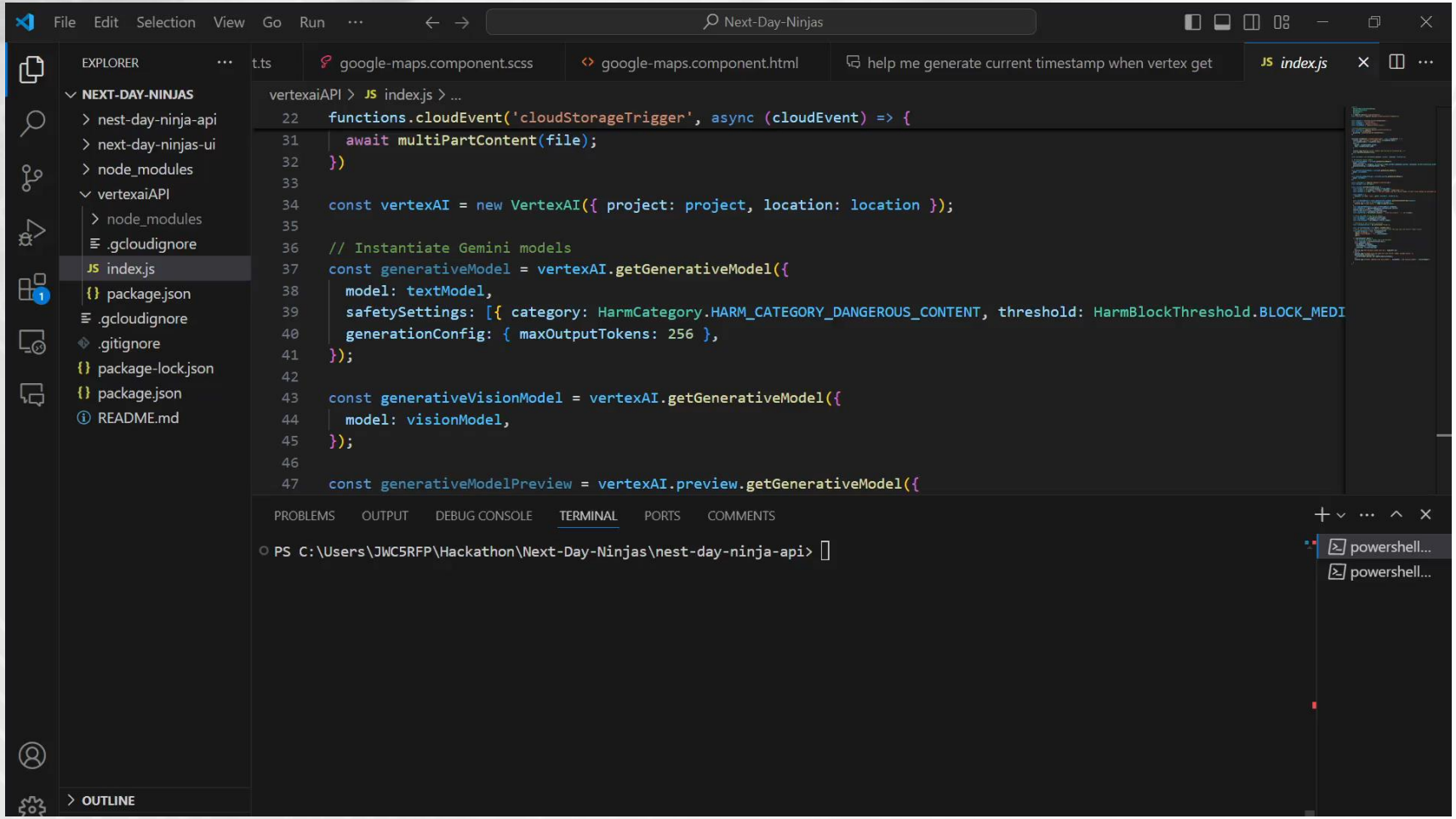
Simple and easy to use interface

Improves efficiency of the process to catalog all known assets in any given yard

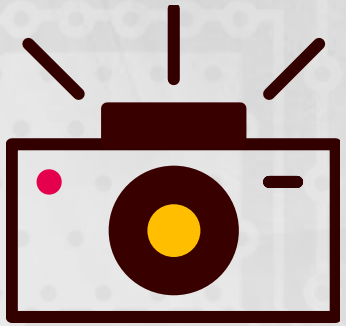
Provides up to date locations of equipment

Incurs no additional hardware cost as the system uses preexisting security cameras

Demo/Prototype



Future Improvements



Use camera data and GPS to determine bay to bay accuracy

Ability to view assets in a single yard

Show smart vehicle/trailer data on selected asset

Fine tune the model to be more accurate

THANK YOU

Questions?