

**DRIVER IDENTIFICATION SYSTEM**

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**Revision Records:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Version** | **Document History** | **Prepared by** | **Reviewed by** | **Approved by** | **Date** |
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**Table of Contents:**

1. [**Driver Identification System-** 5](#_Toc184131471)

[**Objective:** 5](#_Toc184131472)

1. [**DIS System Overview:** 6](#_Toc184131473)
2. [**DIS Flow Chart:** 7](#_Toc184131474)

[**Automated Server Flow Chart:** 7](#_Toc184131475)

[**Driver Identification Process Using Camera and FaceSet APIs** 9](#_Toc184131476)

1. [**Task List:** 10](#_Toc184131477)
2. [**Basic Requirements:** 11](#_Toc184131478)
3. [**Logs:** 14](#_Toc184131479)

**List of Figures:**

1. [Figure 1: System Overview 7](#_Toc184131452)
2. [Figure 2: Automated server flow chart 8](#_Toc184131453)
3. [Figure 3: Driver Identification Process using camera and face API flow chart 9](#_Toc184131454)
4. [Figure 4 : Driver Identification Process using camera and face API flow chart 12](#_Toc184131455)
5. [Figure 5 : Check result of Raspberry Pi 13](#_Toc184131456)

**List of Tables**

No table of figures entries found.

# **Driver Identification System-**

## **Objective:**

To design and implement a secure, efficient, and user-friendly Driver Identification System that utilizes facial recognition to authenticate drivers.

The system will:

1. **Face Registration and Management:** Allow for registering and managing driver facial profiles in the database.
2. **Real-time Identification:** Capture and compare live facial images with registered profiles using a connected camera.
3. **Multimodal Feedback:** Provide identification results via:
   * **Visual Feedback:** Display the driver's identification status (success or failure) on a window with text output.
   * **Physical Feedback:** Blink an LED on a Raspberry Pi to indicate identification success or failure (e.g., green for success, red for failure).
   * **Auditory Feedback:** Announce the identification status via a connected Camera, stating whether the driver is identified or not.
4. **Security and Reliability:** Ensure accurate and secure driver identification to prevent unauthorized vehicle use.

# **DIS System Overview:**

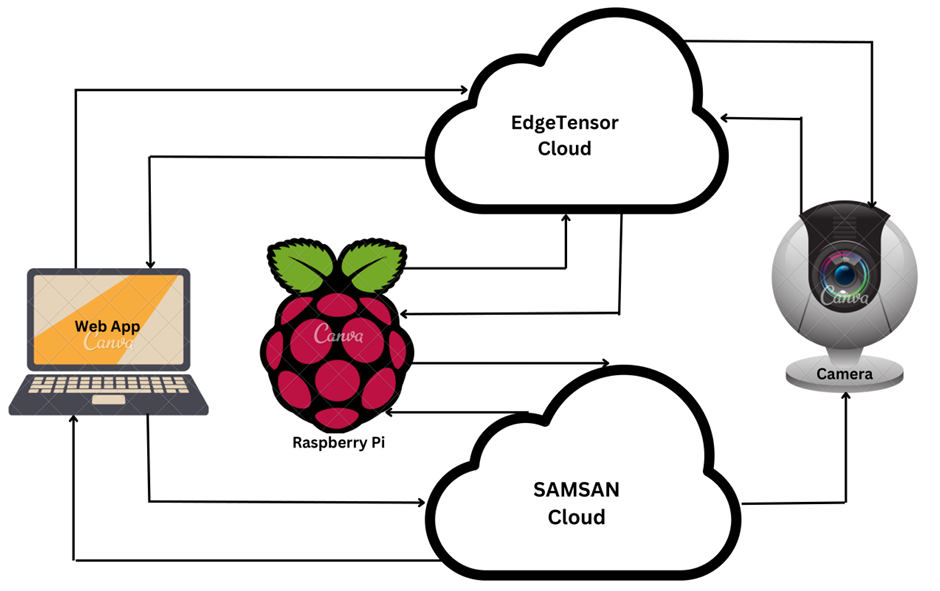
****

Figure 1: System Overview

# **DIS Flow Chart:**

## **Automated Server Flow Chart:**

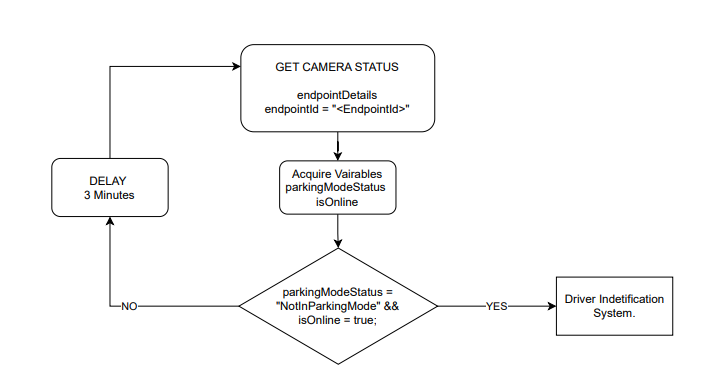
****

Figure 2: Automated server flow chart

## **Driver Identification Process Using Camera and FaceSet APIs**

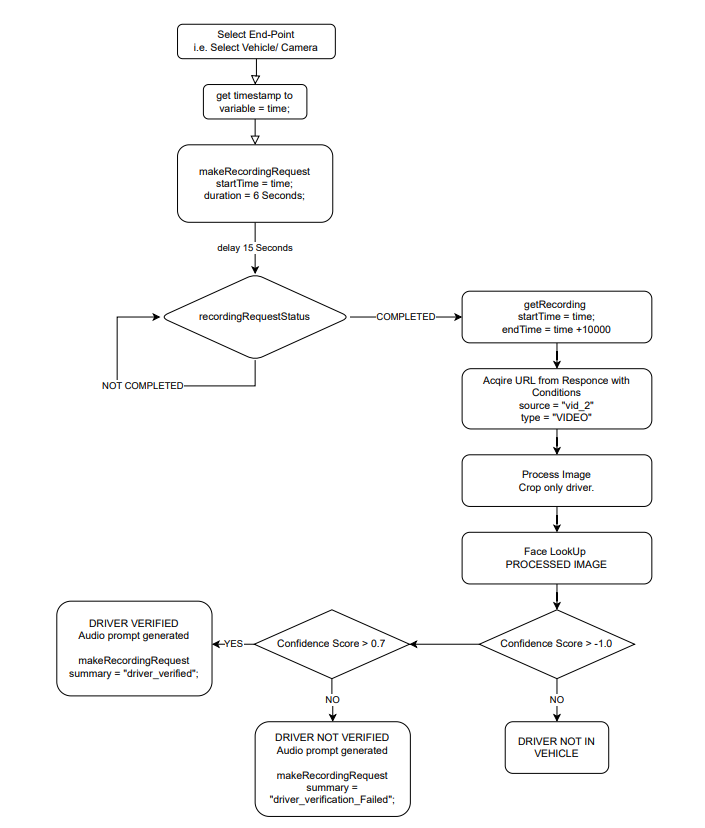


Figure 3: Driver Identification Process using camera and face API flow chart

# **Task List:**

**Driver Identification :**

1. Video Fetching and Frame Capturing.
2. Driver Image isolation and cropping.
3. Faceset Identification via Faseset API.
4. Result processing and result promts and Blink LED of Rasberry pi audio output.

**Server :**

1. Generating automated server with triggers for every 3 minutes.
2. Creating GUI for operating the server.
3. Exception Handling Logic.

**Driver CURD :**

1. Select Driver List.
2. Driver Registration.
3. Delete Driver.

# **Basic Requirements:**

Python version – 3.11.3

Pip Version – 24.0

Github link – https://github.com/nbangar75/Driver\_ID.git

Python Package Installation – pip install -r Driver\_ID-main\Driver\_ID\requirements.txt OR

Python Package Installation - pip install requests== 2.32.3,pip install opencv-python==4.10.0.84,pip install flask==3.1.0,pip install

Run Coments = python demo.py or python faceapi3.py

Python version – 3.11.3

Pip Version – 24.0

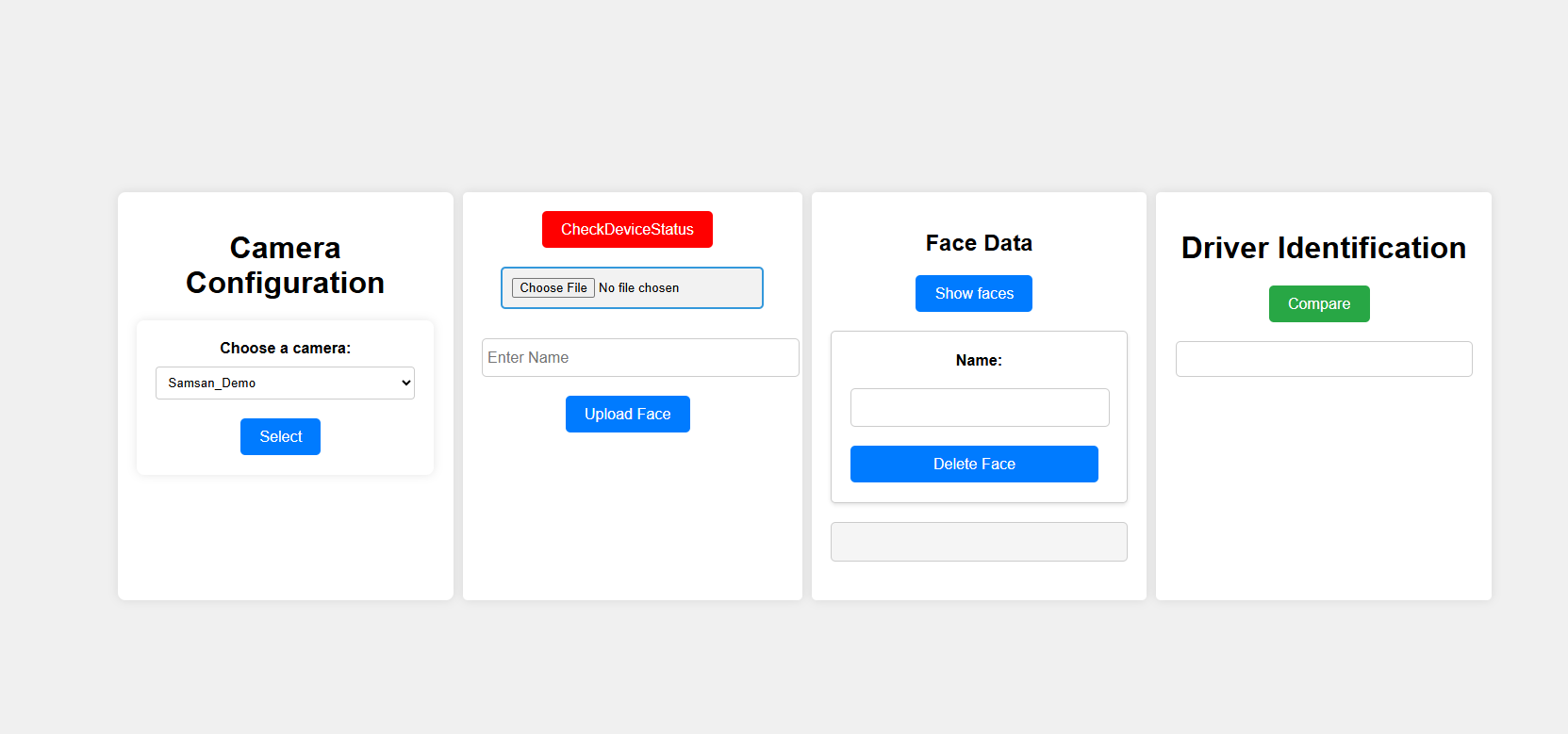
Github link – https://github.com/nbangar75/Driver\_ID.git

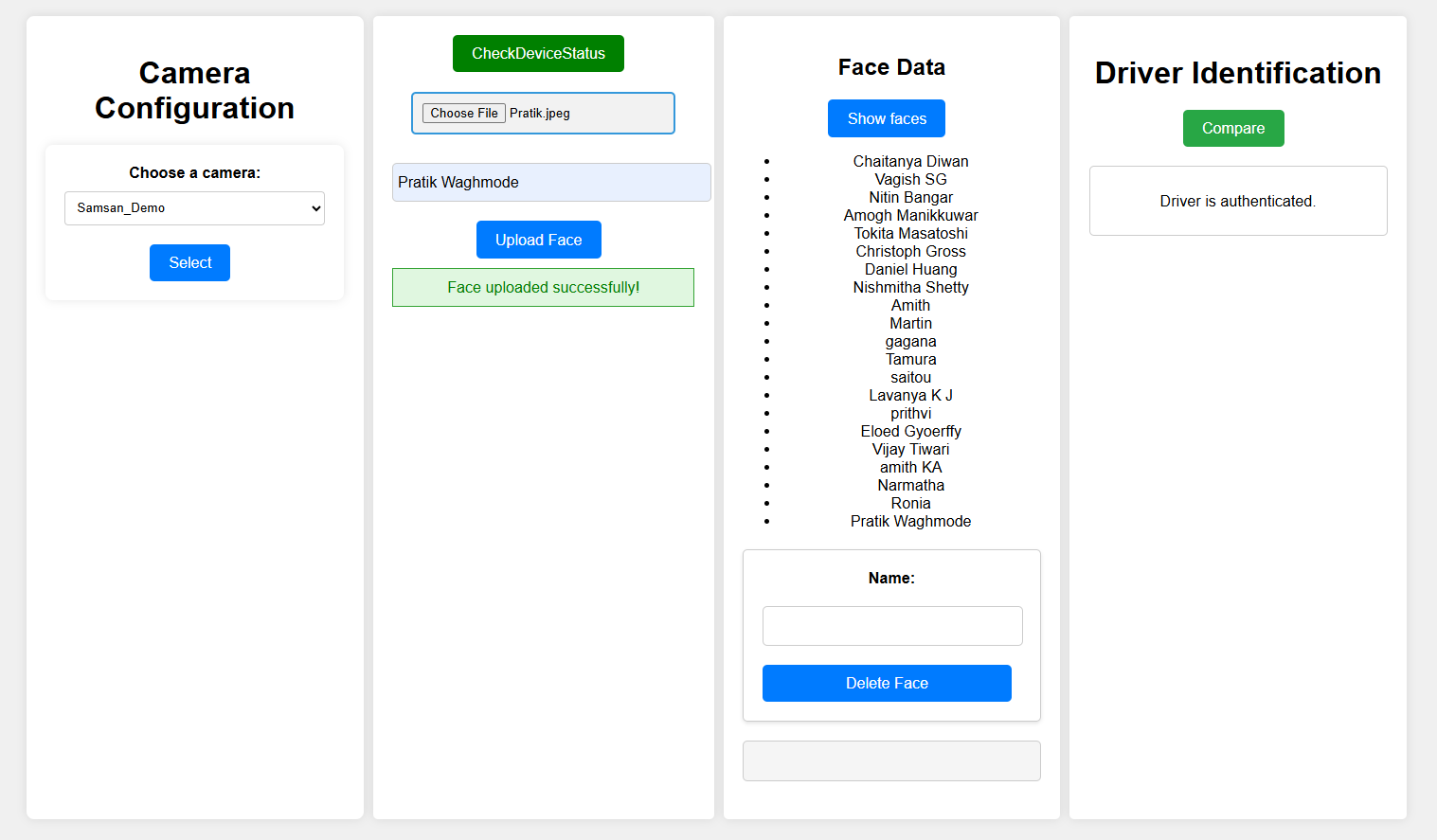
Python Package Installation – pip install -r Driver\_ID-main\Driver\_ID\requirements.txt OR

Python Package Installation - pip install requests== 2.32.3,pip install opencv-python==4.10.0.84,pip install flask==3.1.0,pip install

Run Coments = python demo.py or python faceapi3.p

**Screenshot:**





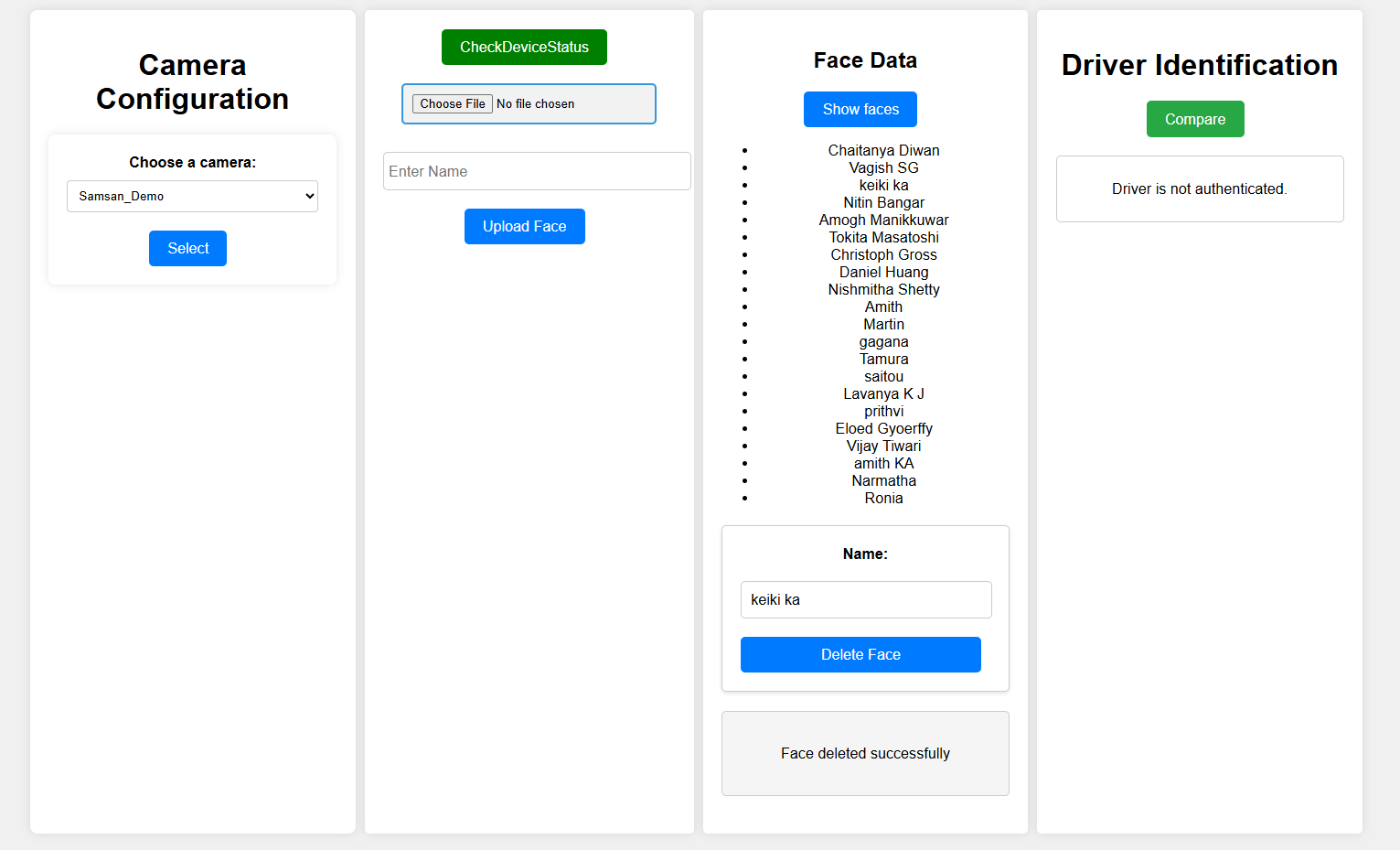
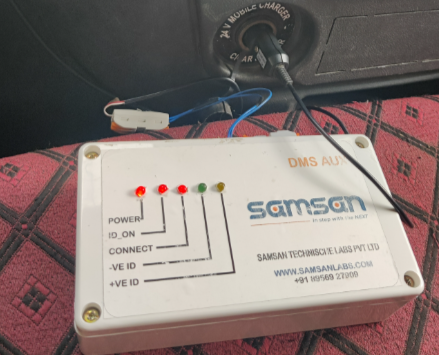
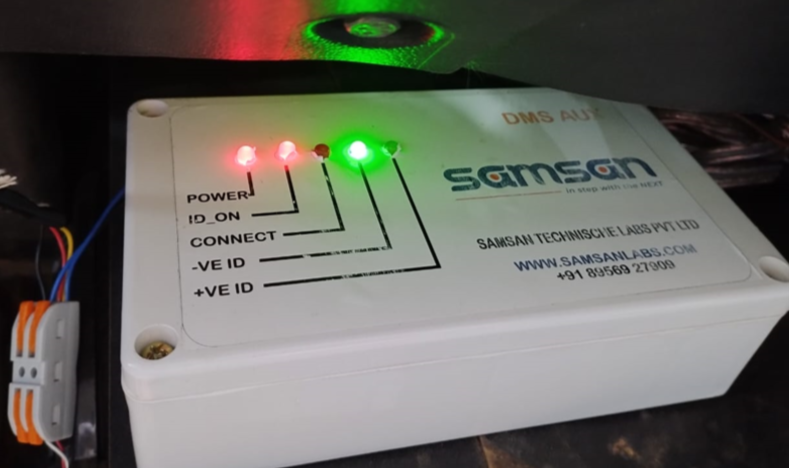
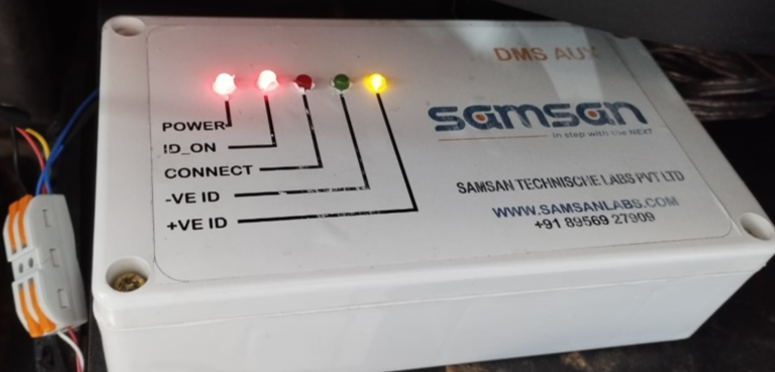


Figure 4 : Driver Identification Process using camera and face API flow chart





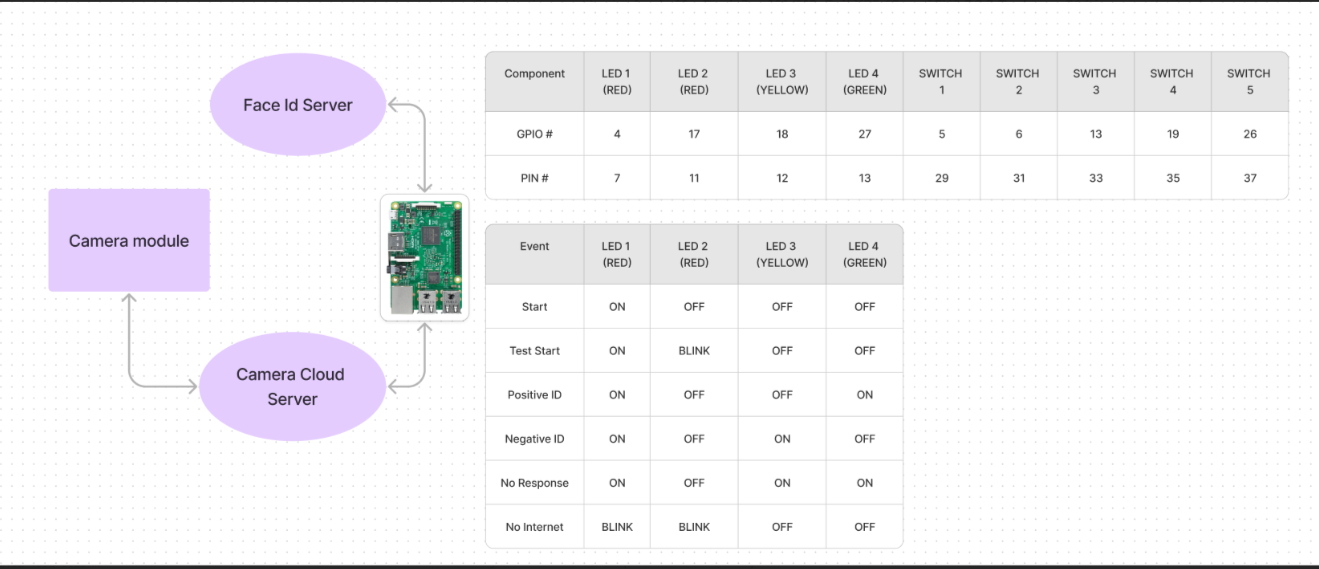


Figure 5 : Check result of Raspberry Pi

# **Logs:**

127.0.0.1 - - [02/Dec/2024 14:25:39] "GET / HTTP/1.1" 200 -

123682

123682

123682

127.0.0.1 - - [02/Dec/2024 14:25:42] "POST /choosecamera HTTP/1.1" 200 -

123682

Online

127.0.0.1 - - [02/Dec/2024 14:25:45] "GET /check\_status HTTP/1.1" 200 -

ID: a26c0760-05f0-4958-82a7-9b48e5bcf7a1, Name: Chaitanya Diwan

ID: d410d2c3-dd41-42ae-b0be-ef6cc0c52f88, Name: Vagish SG

ID: 0a409065-a071-4827-8a1b-3df0c0a667dc, Name: keiki ka

ID: 022eeed6-e372-4942-ac53-3085d306a67d, Name: Nitin Bangar

ID: 70381d44-72c3-4637-a105-02472687eaa3, Name: Amogh Manikkuwar

ID: 31bb1341-529f-4d4c-b240-8b5cb468f6d4, Name: Tokita Masatoshi

ID: 560fefc9-a949-4a0c-8f68-a91828f9ce29, Name: Christoph Gross

ID: 05c00a4c-66cf-44fe-970d-6329ad8a7c0e, Name: Daniel Huang

ID: 4faee9c6-91b7-4263-8621-39c52462d01e, Name: Nishmitha Shetty

ID: d7d343d5-c134-4203-8fb6-1a9379d96a97, Name: Amith

ID: aee9b547-c8bb-4737-adc9-b925d75b3600, Name: Martin

ID: 2e3990d7-d86c-40ce-bd1d-145cb9cac177, Name: gagana

ID: 01053063-ddea-4ff0-88c7-1420b9120218, Name: Tamura

ID: 6f9debc4-2b36-499b-97b3-a53b4e9a36d5, Name: saitou

ID: ff5d5b2b-a10b-4bd9-8949-f52ff77d8a3b, Name: Lavanya K J

ID: dbaf2e60-287f-4bb5-8876-d169cabd1c57, Name: prithvi

ID: a9fd7c46-7d9c-4558-8ac3-4f2a59ee510b, Name: Eloed Gyoerffy

ID: 575863ce-c3cc-482b-8f70-359fcf2dcf23, Name: Vijay Tiwari

ID: 597b6034-44e6-4dd1-b710-4d0af4f3f104, Name: amith KA

ID: 5c6491f9-4d12-4cab-ae2f-68a634722c6b, Name: Narmatha

ID: a0e20103-9039-4ef2-aa92-68c6e941f737, Name: Ronia

127.0.0.1 - - [02/Dec/2024 14:26:03] "GET /display\_faces HTTP/1.1" 200 -

127.0.0.1 - - [02/Dec/2024 14:26:27] "POST /delete\_face HTTP/1.1" 200

current\_timestamp 1733129797853

end\_timestamp 1733129812853

Endpoint ID in /compare: 123682

123682

WITHIN send recording EVQETDNIPSVHUN31S59G4N0JEHGGE3APQGHHMEIAOLBWXVGSAAD25GEZWZ4MGSZ0ZJXC4KBKRXTSPBRC97RHCTQ5IYWEQABK0NLCP1TY37PXEOARABGQRKXADWPOKV2R 6 ALL 123682 None 1733129797853

Response Data: {'status': True, 'requestStatus': 'SENT', 'requestId': '6e122761-528d-418f-a4f1-3b136423d1a4', 'failureReason': None}

Requested ID: 6e122761-528d-418f-a4f1-3b136423d1a4

Result: {'Request ID': '6e122761-528d-418f-a4f1-3b136423d1a4', 'Endpoint ID': 123682, 'Status': 'SENT', 'Summary': '', 'Start Time': 1733129798890, 'Length': 6, 'Content': 'ALL'}

Status: SENT

Result: {'Request ID': '6e122761-528d-418f-a4f1-3b136423d1a4', 'Endpoint ID': 123682, 'Status': 'COMPLETED', 'Summary': '', 'Start Time': 1733129798890, 'Length': 6, 'Content': 'ALL'}

Status: COMPLETED

Start Time: 1733129798890

endpoint\_id = 123682

https://api.smarterai.com/v4

BASE\_@@@@@@@@@@@@ https://api.smarterai.com/v4/endpoints/123682/recordings

Recording ID: 37766468

Start Timestamp: 1733129797699

End Timestamp: 1733129800632

Source: vid\_2

Type: VIDEO

URL: https://api.smarterai.com/url/redirect/v5/MEDIA/599d671c-b667-4f82-a36a-60e557e5ecec

----------------------------------------

Saved the third frame as ./Driver\_ID/tempimage\first\_frame.jpg

ENDPOINT https://frec.edgetensor.ai/v3/lookups/face

Face Lookup Result: {

    "lookup\_results": [

        {

            "best\_matched\_face\_token": "a26c0760-05f0-4958-82a7-9b48e5bcf7a1",

            "best\_matched\_face\_image\_url": "https://frec-prod-files.s3.amazonaws.com/faces/3581d0ca-2ad2-423d-980e-a5dc681faaea/67616902-2903-4c7d-836e-3d4b18dfb6a3/enrollment/20240222T081037372280?X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=AKIAVP22FU4PJS5MWJPE%2F20241202%2Fus-east-2%2Fs3%2Faws4\_request&X-Amz-Date=20241202T085658Z&X-Amz-Expires=3600&X-Amz-SignedHeaders=host&X-Amz-Signature=aa1a325ee0dbeda1760d6367a7083a4d865649764c345d8ef6973677aece9d37",

            "sequence\_number": 0,

            "confidence\_score": 0.5771

        }

    ],

    "project\_id": "3581d0ca-2ad2-423d-980e-a5dc681faaea",

    "faceset\_id": "67616902-2903-4c7d-836e-3d4b18dfb6a3"

}

Face Landmark Lookup Result: {

    "lookup\_results": [

        {

            "best\_matched\_face\_token": "a26c0760-05f0-4958-82a7-9b48e5bcf7a1",

            "best\_matched\_face\_image\_url": "https://frec-prod-files.s3.amazonaws.com/faces/3581d0ca-2ad2-423d-980e-a5dc681faaea/67616902-2903-4c7d-836e-3d4b18dfb6a3/enrollment/20240222T081037372280?X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=AKIAVP22FU4PJS5MWJPE%2F20241202%2Fus-east-2%2Fs3%2Faws4\_request&X-Amz-Date=20241202T085701Z&X-Amz-Expires=3600&X-Amz-SignedHeaders=host&X-Amz-Signature=ec5fbc7203b25a35ca8f8fbf15953f5bf1049c066c585230fc6ef8c862c302b2",

            "sequence\_number": 0,

            "confidence\_score": 0.5801

        }

    ],

    "project\_id": "3581d0ca-2ad2-423d-980e-a5dc681faaea",

    "faceset\_id": "67616902-2903-4c7d-836e-3d4b18dfb6a3"

}

Unknown face. Confidence: 0.5801

127.0.0.1 - - [02/Dec/2024 14:40:36] "GET /check\_status HTTP/1.1" 200 -

image\_path = ./Driver\_ID/selectedimage/Pratik.jpeg

image\_file <FileStorage: 'Pratik.jpeg' ('image/jpeg')>

name = Pratik Waghmode

Response Content: b'{"id\_": "833622e6-1bcf-40d5-9333-a67b3eb0d5e2", "duplicate\_status": 0, "name": "Pratik Waghmode", "project\_id": "3581d0ca-2ad2-423d-980e-a5dc681faaea", "images": [{"image\_url": "https://frec.edgetensor.ai/v2/faces/image/9eb50b92-53bc-4a7a-8e94-a8cb7a35cedd-040a0385-100c-45b8-ad24-28cada3e6612", "created\_on": "2024-12-02 09:10:47.178570"}], "face\_token": "833622e6-1bcf-40d5-9333-a67b3eb0d5e2", "created\_on": "2024-12-02 09:10:47.178619", "faceset\_id": "67616902-2903-4c7d-836e-3d4b18dfb6a3"}'

Response Status Code: 200

WITHIN send recording EVQETDNIPSVHUN31S59G4N0JEHGGE3APQGHHMEIAOLBWXVGSAAD25GEZWZ4MGSZ0ZJXC4KBKRXTSPBRC97RHCTQ5IYWEQABK0NLCP1TY37PXEOARABGQRKXADWPOKV2R 6 ALL 123682 driver\_verification\_failed 1733130667606

Response Data: {'status': True, 'requestStatus': 'SENT', 'requestId': '39ab2d3b-b78b-4794-b7ca-f43fc092f901', 'failureReason': None}

Requested ID: 39ab2d3b-b78b-4794-b7ca-f43fc092f901

127.0.0.1 - - [02/Dec/2024 14:41:45] "POST /compare HTTP/1.1" 200 -

current\_timestamp 1733130738664

end\_timestamp 1733130753664

Endpoint ID in /compare: 123682

123682

WITHIN send recording EVQETDNIPSVHUN31S59G4N0JEHGGE3APQGHHMEIAOLBWXVGSAAD25GEZWZ4MGSZ0ZJXC4KBKRXTSPBRC97RHCTQ5IYWEQABK0NLCP1TY37PXEOARABGQRKXADWPOKV2R 6 ALL 123682 None 1733130738664

Response Data: {'status': True, 'requestStatus': 'SENT', 'requestId': '877f4c4a-46dd-4465-88d7-52a9e31b1f3e', 'failureReason': None}

Requested ID: 877f4c4a-46dd-4465-88d7-52a9e31b1f3e

Result: {'Request ID': '877f4c4a-46dd-4465-88d7-52a9e31b1f3e', 'Endpoint ID': 123682, 'Status': 'SENT', 'Summary': '', 'Start Time': 1733130739194, 'Length': 6, 'Content': 'ALL'}

Status: SENT

Result: {'Request ID': '877f4c4a-46dd-4465-88d7-52a9e31b1f3e', 'Endpoint ID': 123682, 'Status': 'COMPLETED', 'Summary': '', 'Start Time': 1733130739194, 'Length': 6, 'Content': 'ALL'}

Status: COMPLETED

Start Time: 1733130739194

endpoint\_id = 123682

https://api.smarterai.com/v4

BASE\_@@@@@@@@@@@@ https://api.smarterai.com/v4/endpoints/123682/recordings

Recording ID: 37769760

Start Timestamp: 1733130736699

End Timestamp: 1733130739632

Source: vid\_2

Type: VIDEO

URL: https://api.smarterai.com/url/redirect/v5/MEDIA/3938efae-3480-413b-bb4d-88d771d769e3

----------------------------------------

Saved the third frame as ./Driver\_ID/tempimage\first\_frame.jpg

ENDPOINT https://frec.edgetensor.ai/v3/lookups/face

Face Lookup Result: {

    "lookup\_results": [

        {

            "best\_matched\_face\_token": "833622e6-1bcf-40d5-9333-a67b3eb0d5e2",

            "best\_matched\_face\_image\_url": "https://frec-prod-files.s3.amazonaws.com/faces/3581d0ca-2ad2-423d-980e-a5dc681faaea/67616902-2903-4c7d-836e-3d4b18dfb6a3/enrollment/20241202T091046974248?X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=AKIAVP22FU4PJS5MWJPE%2F20241202%2Fus-east-2%2Fs3%2Faws4\_request&X-Amz-Date=20241202T091237Z&X-Amz-Expires=3600&X-Amz-SignedHeaders=host&X-Amz-Signature=296c79831609c4bd2f47d9e7b0ad9bb981e8f35f15c5b9c88130fd9dbe430efc",

            "sequence\_number": 0,

            "confidence\_score": 0.8059

        }

    ],

    "project\_id": "3581d0ca-2ad2-423d-980e-a5dc681faaea",

    "faceset\_id": "67616902-2903-4c7d-836e-3d4b18dfb6a3"

}

Face Landmark Lookup Result: {

    "lookup\_results": [

        {

            "confidence\_score": 0.8083,

            "best\_matched\_face\_image\_url": "https://frec-prod-files.s3.amazonaws.com/faces/3581d0ca-2ad2-423d-980e-a5dc681faaea/67616902-2903-4c7d-836e-3d4b18dfb6a3/enrollment/20241202T091046974248?X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=AKIAVP22FU4PJS5MWJPE%2F20241202%2Fus-east-2%2Fs3%2Faws4\_request&X-Amz-Date=20241202T091240Z&X-Amz-Expires=3600&X-Amz-SignedHeaders=host&X-Amz-Signature=293dd1c9c41be6a4a478ec45b5c82c0d0857b82d9caa03969020a5366039351b",

            "sequence\_number": 0,

            "best\_matched\_face\_token": "833622e6-1bcf-40d5-9333-a67b3eb0d5e2"

        }

    ],

    "project\_id": "3581d0ca-2ad2-423d-980e-a5dc681faaea",

    "faceset\_id": "67616902-2903-4c7d-836e-3d4b18dfb6a3"

}

Face recognized with confidence: 0.8083

Face Token: 833622e6-1bcf-40d5-9333-a67b3eb0d5e2

Recognized Name: Pratik Waghmode