**Project Overview**

Pixel Club is a photography club that captures moments from college events. To make it easier for students to find their photos from events, we propose a **Face Recognition System** integrated with our website. This system will allow students to upload a single image, which will then be used to search for matching photos stored in **Google Drive/Google Photos**.

**Objectives**

* Enable students to quickly find their event photos by uploading a reference image.
* Automate the search process using face recognition technology.
* Provide seamless integration with **Google Drive API** for secure storage and retrieval.
* Implement a user-friendly web interface.

**Implementation Plan**

**1. Storage and API Integration**

* **Google Drive Setup**
  + Create a dedicated Google Drive folder for event photos.
  + Share the folder with a **Google Service Account**.
  + Enable **Google Drive API** for programmatic access.
* **Google Cloud Setup**
  + Create a **Google Cloud Project**.
  + Enable **Google Drive API** and generate API credentials.
  + Obtain a **service account key (JSON format)** to authenticate API requests.

**2. Web Application Development**

* **Backend (Flask Framework)**
  + Develop an API to handle image uploads.
  + Implement a function to list and download images from Google Drive.
  + Process images using **DeepFace** for face recognition.
  + Return a list of matching photos.
* **Frontend (HTML, CSS, JavaScript)**
  + Create a simple UI for students to upload their photo.
  + Display matching photos dynamically.
  + Use JavaScript to interact with the Flask backend.

**3. Face Recognition System**

* **Algorithm Choice**
  + Use **DeepFace (VGG-Face model)** for face verification.
  + Compare uploaded image with event photos from Google Drive.
  + Return matching images with a confidence score.

**4. Deployment Plan**

* **Hosting Options**
  + Deploy Flask backend on **Railway or Firebase Functions** (free tier).
  + Host frontend on **GitHub Pages or Firebase Hosting**.
* **Domain & Security**
  + Optionally set up a custom domain.
  + Secure API endpoints to prevent unauthorized access.

**Expected Outcomes**

* Students can effortlessly find and download their photos from events.
* Automation reduces manual effort for the Pixel Club team.
* Enhances the overall experience of event photography management.

**Potential Challenges & Solutions**

|  |  |
| --- | --- |
| **Challenge** | **Solution** |
| Large dataset of images | Optimize storage and indexing techniques |
| API rate limits | Implement caching and request optimization |
| Privacy concerns | Restrict access to authenticated users only |

**Conclusion**

This system will revolutionize how students access their event memories. By leveraging **Google Drive API, Flask, and AI-driven face recognition**, we can create a seamless and efficient experience for users.