

# Group 7

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## Project 2 Proposal

### App purpose/description

The purpose of this application is to allow users to explore new hairstyles and hair colors automatically using AI-generated transformations from images retrieved through their social media photo accounts (e.g., Google Photos). Instead of manually uploading images, the user will authorize the app to access their existing photo feed, from which the app will identify photos that contain a clear front-facing image of a person. These images will then be displayed in a scrollable interface where users can click on one to select it for processing.

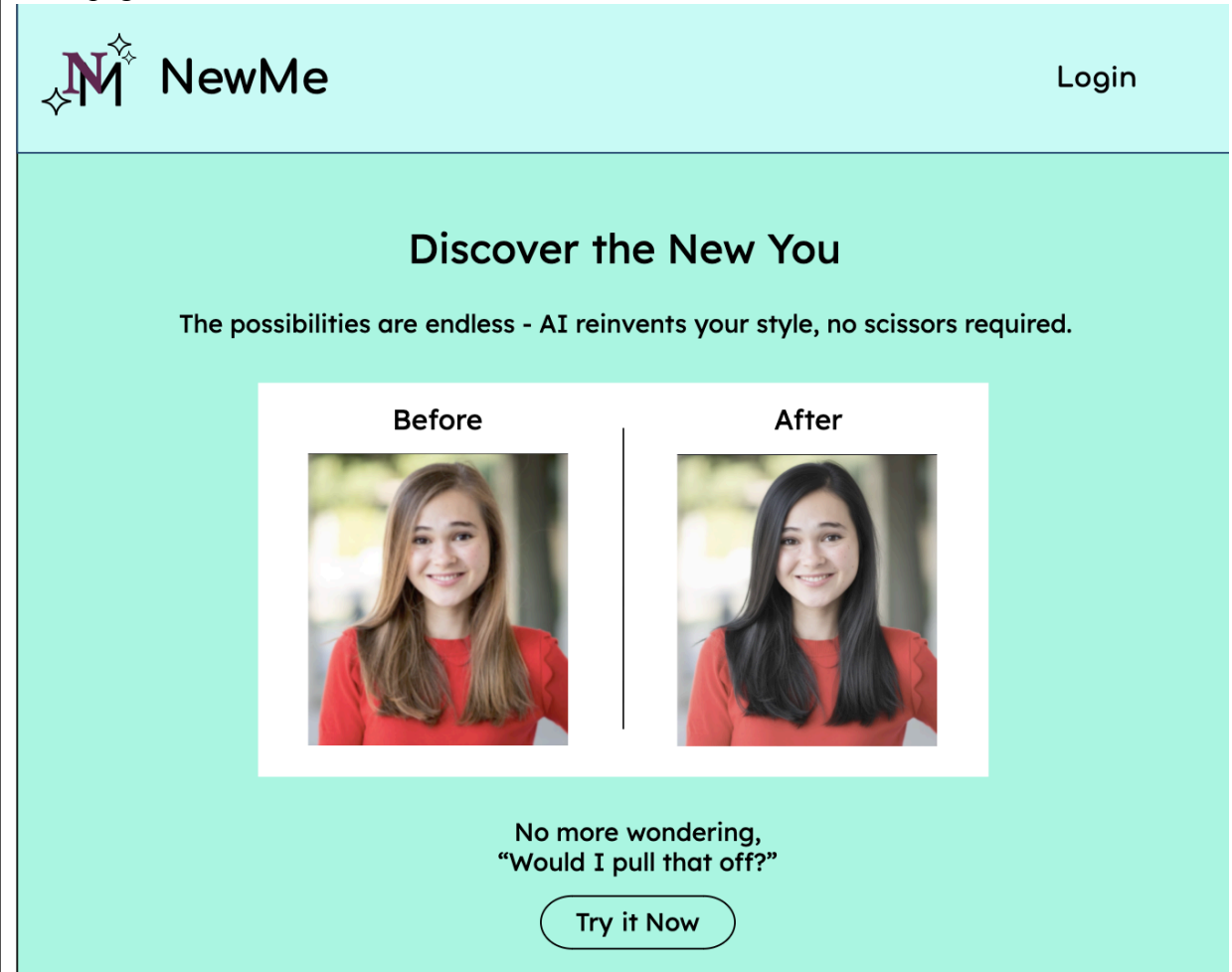
After selecting an image, the system will apply the **Google Vision API** to analyze the image, identifying facial regions, hair color, and hairstyle attributes. The processed results will then be sent to the **Google Gemini API**, which will generate a hairstyle description.

The application will display the selected image along with an AI-generated hairstyle description and allow users to experiment by entering new customization requests for hair color and hairstyle, such as the default suggestions “Red” or “Mohawk.” These requests will be processed through the **Google Gemini API**, which generates an updated image reflecting the user’s chosen changes. Users can then visualize the new look and either apply additional modifications or select a different image to style.

The app aims to provide a fun, interactive, and creativity-driven experience for users who want to experiment with their appearance virtually—without the need for manual editing or real-world commitment. The project integrates **social media authentication**, **Google Vision** for image analysis, and **Gemini** for generative styling suggestions, creating a seamless AI-powered virtual styling platform.

## MockUp interfaces - Vanessa

Homepage:



If user selects "Try it Now":



## Start Your Style Adventure

Explore new hairstyles and colors from your Google Photos! Let AI spark your creativity — it's fun, easy, and completely safe.



Sign in with Google

So close to seeing the magic...  
Just a click away

After pressing the “Sign in with Google” button or “Login”:



Google

Sign in

with your Google Account

Email or phone

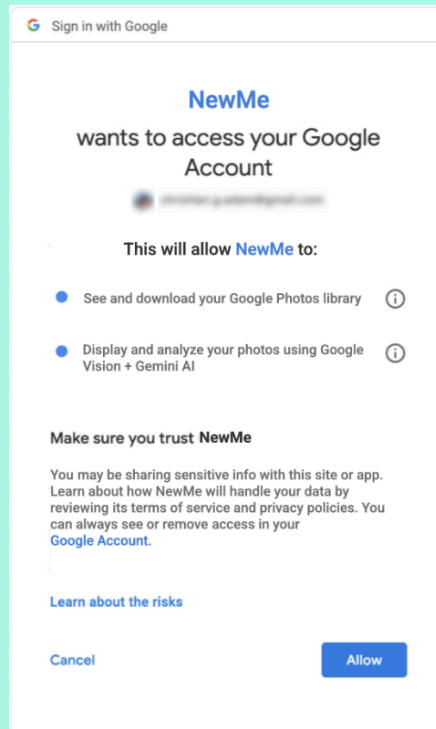
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[Forgot email?](#)

Not your computer? Use Guest mode to sign in privately.  
[Learn more](#)

[Create account](#) [Next](#)

After pressing “Next” and entering password:



After selecting “Allow” (24 images per page):

## Your Style Adventure Awaits

Select a Photo and Get Started.

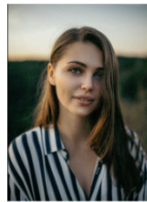


Original Photos



Styled Photos

↕ Sort



< Page 1 >

After selecting “Styled Photos”:

## Your Style Adventure Awaits

Select a Photo and Get Started.

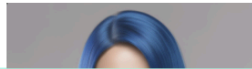
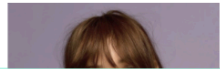


Original Photos



Styled Photos

↕ Sort



< Page 1 >

After selecting "Sort":

## Your Style Adventure Awaits

Select a Photo and Get Started.



Original Photos

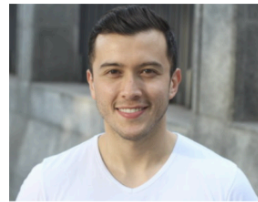
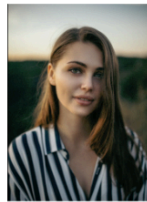


Styled Photos

↕ Sort

Newest First

Oldest First



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After selecting the top left image (in Original Photos):

✦ ✦ Style Inspiration

Popular Hair Colors

Trending Hairstyles

## Experiment and Get Creative



The man has **black hair** that appears to be cut short, accompanying a **beard** and **moustache** that make up his **facial hair**.

What would you like to customize?

Hair Color



Red

Hairstyle



Mohawk

Submit



Delete

If user selects "Popular Hair Colors":

✦ ✦ Style Inspiration

Popular Hair Colors

- ❖ Blonde
- ❖ Black
- ❖ Auburn
- ❖ Brown
- ❖ Red
- ❖ Silver
- ❖ Pink
- ❖ Lavender
- ❖ Blue Ombre
- ❖ Burgundy
- ❖ Vibrant Green

Trending Hairstyles

## Experiment and Get Creative



The man has **black hair** that appears to be cut short, accompanying a **beard** and **moustache** that make up his **facial hair**.

### What would you like to customize?

Hair Color



Red

Hairstyle



Mohawk

Submit



Delete

If user selects "Trending Hairstyles":

✦ ✦ Style Inspiration

Popular Hair Colors

Trending Hairstyles

- ❖ Ponytail
- ❖ Braid
- ❖ Bob Cut
- ❖ Curly Layers
- ❖ Pixie Cut
- ❖ Beach Waves
- ❖ Straight
- ❖ Bangs
- ❖ Braided Updo
- ❖ Shaggy Mullet
- ❖ Mohawk
- ❖ Bowl Cut
- ❖ Pompadour
- ❖ Fluffy Cut
- ❖ Buzz Cut
- ❖ Undercut
- ❖ Messy Fringe
- ❖ Man Bun
- ❖ Beard

## Experiment and Get Creative



The man has **black hair** that appears to be cut short, accompanying a **beard** and **moustache** that make up his **facial hair**.

### What would you like to customize?

Hair Color



Red

Hairstyle



Mohawk

Submit



Delete

If user enters "Pink" and "No Beard":

✦ ✦ Style Inspiration

Popular Hair Colors

Trending Hairstyles

## Experiment and Get Creative



What would you like to customize?

Hair Color



Red

Hairstyle



Mohawk

Submit

Save the NewMe

If user selects "Save the NewMe":

## Your Style Adventure Awaits

Select a Photo and Get Started.



Original Photos



Styled Photos

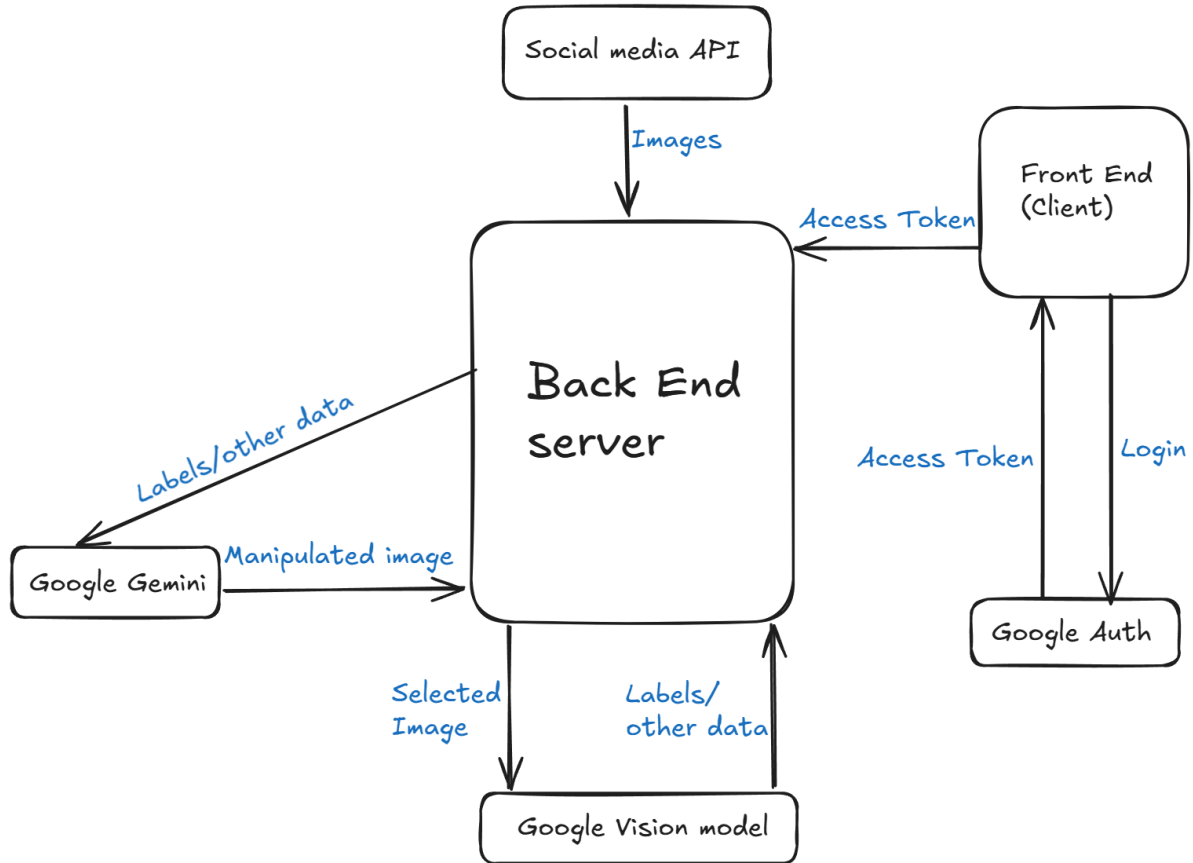
↕ Sort



< Page 1 >

# System Diagram

NOTE - May change as we progress.



## Flow of Control Details (steps in processing w/technical details - what you are doing/using)

*NOTE - May change as we progress.*

### Step 1 - User Login And Authorization

1. The user opens the **NewMe** web application in the browser.
2. The user clicks on “**Sign in with Google.**”
3. The front end triggers a **Google OAuth 2.0** authorization procedure.
  - a. A request is made to access the **Google Photos Library API**.
4. Authorization code is returned to the frontend.
5. Frontend passes the authorization code to the backend server.
6. The backend exchanges the authorization code for an access token to retrieve the user’s photo library.

Technical details -

- Authentication is handled using **Google OAuth 2.0**.
- The backend is implemented in **Node.js / Express**.
- The frontend is developed using **React.js**.

### Step 2 - Retrieving and Filtering User Photos

1. Backend uses access token to call **Google Photos REST API**.
2. The application filters and retrieves images that contain **clear, front-facing human faces** using **Google Vision API**.
3. The filtered photos are displayed in a **scrollable gallery view** for the user to select an image for processing.

Technical details -

- Google Vision API is used to detect human faces and identify facial features (e.g., hair, eyes, face boundaries).
- Only images meeting a confidence threshold (e.g., 90% face detection accuracy) are displayed.
- The React frontend dynamically renders a gallery grid layout.

## Step 3 - AI Hairstyle Analysis and Transformation

1. The user selects an image from the gallery.
2. The selected image is analyzed by the **Google Vision API** to identify the current hairstyle and hair color.
3. The user can enter a **customization request** (e.g., “Red” or “Mohawk”).
4. The backend sends the image data and user request to the **Google Gemini API**.
5. Gemini generates a **new hairstyle description** and a **transformed image** reflecting the requested change.
6. The frontend displays the updated image and AI-generated description.
7. The user can choose to **apply additional changes** or **select a new image**.

### Technical details -

- Gemini Vision + Language model used for generating visual transformations and natural language hairstyle descriptions.
- Responses are formatted and returned as structured JSON data.
- Backend stores the email, hairstyle description, and original and processed image metadata in **Google Firestore**.

### Other Technical details -

The front end web app will dynamically create a grid/gallery view where photos are displayed for the user to select.