System Requirements Specifications

Project “Memories”

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1. Introduction

1.1. Purpose of this document –

This document has been written to better describe the functional and non-functional requirements of the project. And to better understand how the final version of the product might look like, including the user interface, the process layout, and the required features.

1.2. Scope–

The product which we aim to develop is called "Memories" which will be a photo-saving, and organising app.

In Scope:

1. Managing the photos of a multiple users.
2. Automatically recognising faces within photos.
3. Grouping photos together by the recognised photos.
4. Automatically generating captions for the photos.
5. User authentication.

Out of Scope:

1. Photo clicking functionality.
2. Photo editing functions.

1.3. Definitions, Acronyms, and Abbreviations –

Acronyms:

a. GB – Gigabyte
b. MP – Megapixels
c. GUI – Graphical User Interface
d. SRS – Software requirements specification

Definitions:

a. Caption – An overall description of the image that includes the names of all people inside a photo to enable them to be searched.

1.4. Overview –

This SRS contains a high-level overview of the product, describing what the final product might contain, room for expansion, and other requirements that the product must fulfil.

2. General description –

2.1. Product Perspective –

Memories is aimed towards those users who have trouble organising photos and often require sorting photos by the people captured in those photos instead of traditional methods such as date and time, or location.

Memories is intended to be a standalone web app and should run on all major browsers such as Chromium based browsers and Mozilla Firefox.

2.2. Product Functions –

Classes of Use Cases	Use Cases	Description of Use Cases
Use Case related to system authentication	Register New User	Register new user for Memories
	Login	Login into Memories
	Change password	Change login password
	Logout	Logout from Memories
Use Case related to registering new users	New User	Addition of new user into the database
	Delete User	Deleting new/existing user account from the Memories database
	User details	Uploading new user details or updating existing user details
Use Case related to Face recognition	Face recogniser	Facial recognition and grouping them into different folders based on whose photo it is
	Group Photos	Distinctly recognising faces in a group photo and then assigning that photo to the specific folders
Use Case related to photo management	Add photo	Add new photos to the gallery
	Delete photo	Delete unwanted or duplicate photos
	Upload Date	Showing the user when the photo was uploaded
	Change Creation Date	Allows the user to change the creation date to assist in grouping photos based on date and time
Use Cases relating caption generation	Captioning	The software auto generated captions based on the photos
	Search	Searching photos based on the assigned caption

2.3. User Characteristics –

a. The user should have some sort of photography device such a camera-phone or a camera.
b. The user should be able to transfer photos from the device to their computer, or have uploading capabilities from their device.

2.4. Principal Actors –

The two principal actors in Memories are ‘user’ & ‘system.’

2.5. General Constraints –

a) The user should have a working internet connection.

b) Memories is a single user software.

2.6. Assumptions & Dependencies

a) Full working of memories is dependent on a stable internet connection.
b) The quality of uploaded photos should be reasonably good for accurate face recognition.
c) The names associated with faces can only be generated once the user has attached names to faces.

3. Specific Requirements

3.1. Functional Requirements

Use cases related to system authorization:

Use Case 1: Login
Primary Actor: User
Pre-Condition: Nil
Main Scenario:

1. Start the application. User prompted for login and password.
2. User gives the login and password.
3. System does authentication.
4. Main screen is displayed.

Alternate Scenario:
1(a). Authorization fails
1(a)1. Prompt the user that he typed the wrong password.
1(a)2. Allow him to re-enter the password. Give him 3 chances.

Use Case 2: Reset Password
Primary Actor: User
Pre-Condition: Nil
Main Scenario:

1. User selects change password command.
2. User is sent a mail containing reset link.
3. User enters new password using the reset link.
4. System updates the password.
5. User is logged in with the new password.

Use Case 3: Register new user
Primary Actor: User
Pre-Condition: Nil
Main Scenario:

1. New user opens app for the first time.
2. User is asked to enter details such as email, password etc.
3. System registers the new user.
4. User is sent a verification email.
5. User is logged into new account.
6. User is shown the main landing page.

Use cases related to photo management:

Use Case 4: Upload Photo

Primary Actor: User
Pre-Condition: User Logged in
Main Scenario:

1. User clicks on the upload photo page.
2. User is prompted to add new photos from their local device.
3. System receives photo and runs face recognition on it.
4. The photo is reflected in the user account.
5. Photo is grouped according to the appropriate criteria.

Alternate Scenario:
4(a). Internet connection fails

4(a)1. Inform the user that uploading process has failed.
4(a)2. Allow the user to retry uploading. Allow maximum of 5 tries.
4(a)3. Inform the user to check their internet connection and retry uploading photos by selecting them again.

Use Case 5: Delete Photo

Primary Actor: User
Pre-Condition: User Logged in
Main Scenario:

1. User right clicks on a photo and clicks on delete button.
2. User is prompted to confirm the deletion of selected photos.
3. System deleted the photo from the user account and database.
4. The deleted photo is removed from all groups.

Use Case 6: Group Photos

Primary Actor: User
Pre-Condition: User Logged in
Main Scenario:

1. User clicks on a sorting criterion.
2. Photos are grouped according to the criteria and shown to the user.

Use Case 7: Generate Captions

Primary Actor: System
Pre-Condition: Nil
Main Scenario:

1. System receives a photo and all associated faces in it.
2. System matches the faces to their names as specified by the user.
3. System assigns a caption to the photo which is stored.

Use Case 8: Search for photos

Primary Actor: User
Pre-Condition: User Logged in
Main Scenario:

1. User clicks on the search bar and enters keywords.
2. The keywords are matched to the user's photos.
3. Matched photos are shown to the user.

Alternative Scenario:

8(a). No Photos matched

8(a)1. Display a no photos found image to the user.

8(a)2. Prompt the user to enter other keywords or broaden the search by including less keywords.

3.2. Interface Requirements

Authentication:

a) The authentication page will contain two buttons, one for registering and the other for logging in.
b) The login page will further contain the option to login using email and password, having a text field for both.
c) There will be reset password button on the login page which will redirect to a page containing email entry.

Main content:

a) The main page of the app will contain photographs arranged in a grid like format.
b) There will be a search bar at the top of the page in the navbar.
c) A small floating button will be present in the bottom right to upload new images.
d) Images can be right clicked to show other options such as view, delete, view upload date etc.
e) The page will contain a drawer bar to have options where the users can group photos according to various criteria.
f) There will also be a tab to view people in photos sorted according to their name.

4. Performance Requirements

4.1. The authentication should be near-instantaneous, taking less than 1 second.
4.2. Loading images can be a cumbersome task, therefore its speed is limited purely by the user's internet connection.
4.3. Create and rename functions should be done in parallel to make them appear seamless.
4.4. The product needs primary memory to store currently loaded images, therefore should be able to consume as much memory as required.
4.5. The facial recognition component may take some time to process each photo depending on the resolution & size of the image, however should be able to process one photo in less than 2 minutes.

5. Non-Functional Attributes

5.1. It is expected that no matter what, the images stored should not be deleted without a user's consent, hence reliability is important.
5.2. The data should not be corrupted under any circumstance.
5.3. The data should be secure, as the photographs of a user can be extremely private.
5.4. Speed of loading images should be fast.
5.5. The face classification should be accurate, and false positives and negatives should be minimised.