DREAM TEAM

TECHNOLOGY SOLUTIONS

CogniOpen
Software Application

Software Requirements Specification

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1 Introduction

The innovative CogniOpen software application was created to meet the specific requirements of seniors and people with memory impairments. The application (app) intends to improve the life of memory-related individuals and their personal caretakers by helping find misplaced items, track conversations, and manage appointments. All this will be accomplished by fusing modern Artificial Intelligence (AI) technologies with user-friendly features. To ensure this goal is met, this document will provide a thorough overview of the app's needs, design, and functionality.

1.1 Purpose

The purpose of this Software Requirements Specification (SRS) document is to establish a clear knowledge of the specifications that guide the creation of the CogniOpen software application. It outlines the app's functions, the interactions users might anticipate, and the technical factors involved. This document provides a roadmap for the development team, stakeholders and project managers, to ensure successful development of an original and useful care assistant program.

1.2 Scope

The scope of the CogniOpen software application spans a broad range of areas and has been specifically designed to cater to the needs of its target audience. The app aims to provide a comprehensive solution for memory-related issues by assisting users with locating items, capturing and summarizing conversations, managing appointments, and offering caregiver support. To provide its functionality, the app will use AI-powered speech diarization, image recognition, and natural language processing. The integration of external AI services like Chat Generative Pre-trained Transformer (ChatGPT) will elevate its capability to provide intelligent responses.

1.3 Overview

This SRS document will provide clear, concise and detailed information on the requirements of CogniOpen. This document will provide the requirements in the form of use-cases. By providing the requirements in this format, it should be clear how the system under discussion (SUD) will respond within given scenarios. This provides an easy way of testing the system by creating an individual test case for each use-case/scenario. Dream Team Technology Solutions (DTTS) will provide this document to the client to gather feedback and ensure that all necessary requirements have been documented. Upon acceptance of the document, DTTS will begin development of the CogniOpen software application.

Section 2; titled Overall Description, will provide a high-level system overview and Section 3; titled Specific Requirements, will provide the use-case details which encompass the full system functionality.

1.4 Document Organization

This document is organized into several sections to facilitate a structured understanding of the CogniOpen app's requirements and features. These sections include the Introduction, Overall Description, Specific Requirements, and Non-functional Requirements. Each section focuses on a specific aspect of the app, contributing to a comprehensive understanding of its design and functionality.

Section 1: the Introduction section provides an overview of the SRS document presenting the project purpose and scope as well as introducing the terms and project documents utilized within the document.

Section 2: the Overall Description section provides guiding factors, typical users, use-case list and diagrams, and assumptions and dependencies. This section will provide guidelines and principles that will influence the development of the project, characteristics of the intended users for the application, needs and expectations of the end-user, and assumptions and dependencies made during the planning phase.

Section 3: the Specific Requirements section provides functional requirements in the form of use-cases. These use-cases are detailed descriptions of expected functions of the application along with screenshots to help drive user interface (UI) development. Actors, precondition, triggers, postconditions, main scenario, and alternate paths are included in the use-cases.

Section 4: the Non-Functional requirements section will review the performance, security, reliability, scalability, and documentation requirements of the project. These detailed specifications help to shape the development of the application by eliminating any ambiguity and confusion.

1.5 Project Document Suite

This SRS is part of a suite of project documents that collectively provide comprehensive project documentation. The suite includes:

Document	Version	Date
Project Plan (PP)	4.0	07/Nov/2023
Software Requirements Specification (SRS)	4.0	07/Nov/2023
Technical Design Document (TDD)	3.0	07/Nov/2023
Test Plan (TP)	3.0	07/Nov/2023
Programmer Guide (PG)	2.0	07/Nov/2023
Deployment and Operations Guide (Runbook)	2.0	07/Nov/2023
User Guide (UG)	1.0	07/Nov/2023
Test Report (TR)	1.0	07/Nov/2023

Table 1: Project Document Suite

Additional project documents, including the UG and TR, will be developed as the project progresses.

1.6 References

Institute of Electrical and Electronics Engineers. (1998). *IEEE Std. 1233-1998: IEEE Guide for Developing System Requirements Specification.* https://pdfs.semanticscholar.org/4018/ea1263f10052e3197c4d2a866b62fde83167.pdf

Institute of Electrical and Electronics Engineers. (1998). *IEEE Std. 830-1998 IEEE Recommended Practice for Software Requirements Specifications.* http://www.math.uaa.alaska.edu/~afkjm/cs401/IEEE830.pdf

UMGC (2020). *Capstone Project Guide.* SWEN 670: Software Engineering Capstone, University of Maryland Global Campus (UMGC). https://learn.umgc.edu/d2l/le/content/920456/viewContent/31091351/view

UMGC (2023). *Syllabus.* SWEN 670: Software Engineering Capstone, University of Maryland Global Campus (UMGC). https://umgc.campusconcourse.com/view_syllabus?course_id=255524

1.7 Terms, Abbreviations, & Acronyms

This section will provide a glossary of terms, abbreviations, and acronyms used throughout the SRS document. It aims to ensure a shared understanding of terminology among all stakeholders involved in the project.

Term	Definition
AES	Advanced Encryption Standard
AI	Artificial Intelligence
App	Application
AWS	Amazon Web Services
ChatGPT	Chat Generative Pre-trained Transformer
DTTS	Dream Team Technology Solutions
HTTPS	Hypertext Transfer Protocol Secure
PP	Project Plan
SRS	Software Requirements Specifications
SUD	System under discussion
UI	User Interface
UMGC	University of Maryland Global Campus

Table 2: Terms, Abbreviations, & Acronyms

2 Overall Description

There will be two primary users of the application: the memory-impaired individual and the caregiver/family member. The CogniOpen software application will provide a guided tour and help center to assist all actors in accomplishing tasks within the application. In addition, a settings module to toggle location services will also be available to provide expanded user functionality. The main functionality can be broken down into five separate high-level modules: the base module, assistant module, conversation module, video module, and gallery module.

The base module will include the base functionality of the application, including core application code such as navigation.

Within the assistant module, users will be able to ask the assistant a question about conversation, video, significant item, or list/reminder. Users will also be able to ask the assistant where they are when location services have been enabled. In all cases, the assistant will respond with the appropriate response or location.

Within the conversation module, users will be able to record a conversation for processing of data to be used within the assistant and gallery modules. They are also able to enable the passive conversation recording feature.

Within the video module, users will be able to record a video for processing of data to be used within the assistant and gallery modules. They are also able to enable the passive video recording feature.

Within the gallery module, users can search and view all collected media and its associated notable data. Users are also able to edit recordings and data that was stored erroneously. Users can also manage significant items, where a significant item is anything that can be captured by a video that is commonly used by the user or is to be referenced later. Finally, users can upload images manually to note significant items.

Guiding Factors:
The purpose of this application and all requirements defined here within come from the need to help individuals with memory-impairment as well as their family members and/or caretakers when appropriate. Since this application is intended to be used primarily by those with memory-impairment and cognitive challenges, the most important guiding factor for the application is that the user interface must be easy to use. The following principles should be considered when designing the UI and application to ensure this ease of use:

- Simple UI design
- Consistency
- Provide appropriate feedback
- Avoid complexity

In addition, user needs can be found within Section 2.2; Actors. These individual needs, listed below each actor, should also guide development.

2.1 Actors

This section introduces the various actors who will interact with the CogniOpen software application. Actors represent different user roles and entities that engage with the application's functionalities. The CogniOpen is designed to cater to the needs and preferences of the following actors.

2.1.1 Memory-Impaired Individual

Description: This primary user group consists of individuals who have been diagnosed with short-term memory loss. These users may have varying degrees of memory impairment due to factors like aging, dementia, Alzheimer's disease, or other conditions.

Goals:

- Improve communication and engagement in conversations.
- Retain important information and memories.
- Enhance daily life through technology-assisted memory support.

Needs:

- A user-friendly interface that accommodates cognitive challenges.
- Clear transcriptions of conversations for easy access and recollection.
- Intuitive interaction without relying on complex commands.
- Assistance in recalling information and events.
- Convenient access to medication reminders and tracking.

2.1.2 Caregiver/Family Member

Description: Caregivers, family members, and friends who provide support and care to individuals with short-term memory loss make up this actor category.

Goals:

- Enhance communication and engagement for the memory-impaired individual.
- Improve the quality of life and well-being of the individual.
- Ensure the individual's safety and adherence to medication routines.

Needs:

- An intuitive setup process for the memory-impaired individual.
- Access to view and manage recorded conversations and interactions.
- Ability to help in organizing significant objects and locations.
- Communication with the memory-impaired individual through the app.
- Monitoring medication adherence and receiving alerts when necessary.

2.1.3 Healthcare Professional

Description: Healthcare providers, doctors, therapists, and professionals who work with individuals with cognitive impairments fall under this category.

Goals:

- Assist patients in managing their memory loss and cognitive challenges.
- Provide recommendations for using technology to support memory.
- Ensure the overall well-being and health of the patients.

Needs:

- Information on the application's effectiveness and usability.
- Clear setup instructions to guide patients in using the app.
- Guidance for integrating the solution into the patient's daily routine.
- Resources for educating patients and caregivers about the app's benefits.
- Access to relevant patient data and insights to support medical care.

2.1.4 Technology Enthusiast

Description: This actor category includes individuals who are tech-savvy and interested in exploring innovative solutions to address cognitive challenges.

Goals:

- Understand the technical aspects of the CogniOpen Software Application.
- Provide feedback on usability, features, and functionality.
- Suggest improvements and enhancements to the application.

Needs:

- Technical documentation that explains the application's architecture and design.
- Information about API integration, data handling, and processing.
- Resources for troubleshooting technical issues and providing feedback.
- Opportunities to collaborate and contribute to the application's development.

2.1.5 Accessibility Advocate

Description: Accessibility advocates are individuals passionate about promoting inclusivity and accessibility for people with disabilities.

Goals:

- Ensure that the application is designed with accessibility best practices.
- Advocate for user-centered design and usability for all users.
- Promote awareness of the application's benefits within the disability community.

Needs:

- Information about accessibility features and considerations.
- Insights into potential challenges for users with disabilities.
- Recommendations for improving the application's inclusivity and usability.

2.2 Use-Case List

There are 10 Use-Cases that make up the system requirements. This section lists a high-level description of each. Details will be provided in Section 3. In addition, Use-Case diagrams are illustrated in Section 2.4.

Module	ID	Use-Case	Description
Base	SRS-1	Initialize the application	Actors can agree to application permissions.
Gallery	SRS-4	View conversation in the gallery	Actors can view conversations in the gallery.
Gallery	SRS-5	Edit a conversation	Actors can edit incorrect aspects of historical conversation content.
Gallery	SRS-6	Set up significant objects	Actors can upload images or take photos of significant objects.
Gallery	SRS-7	Search in location history	Actors can search recordings for location information.
Video	SRS-8	Record a video	Actors can record videos.
Video	SRS-9	Pause video recording	Actors can pause video recording.
Assistant	SRS-11	Locate an object	Actors can use the application to locate an object.
Gallery	SRS-14	View media in gallery	Actors can view photographs, video, and associated data in the gallery.
Gallery	SRS-16	View Timeline	Actors can view a timeline of where they were.

Table 3: Use Case List

2.3 Use-Case Diagrams

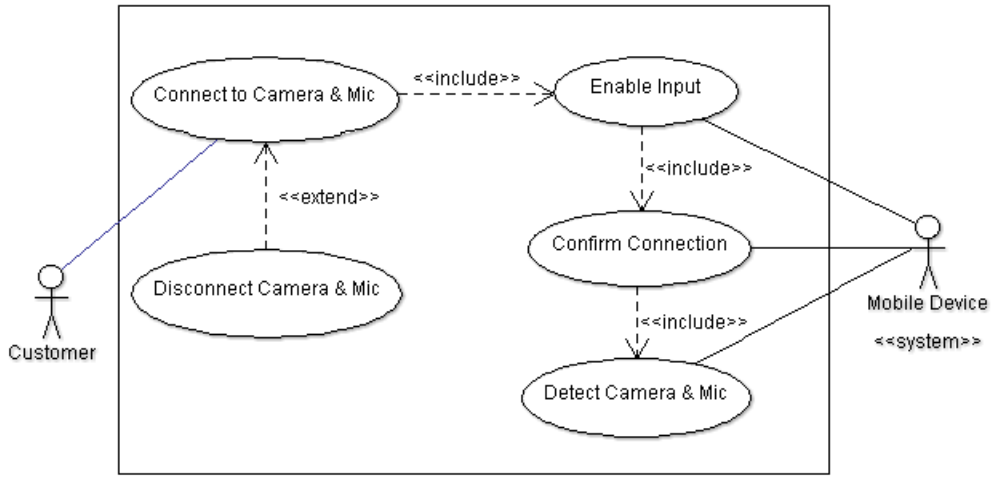


Figure 1: Activation

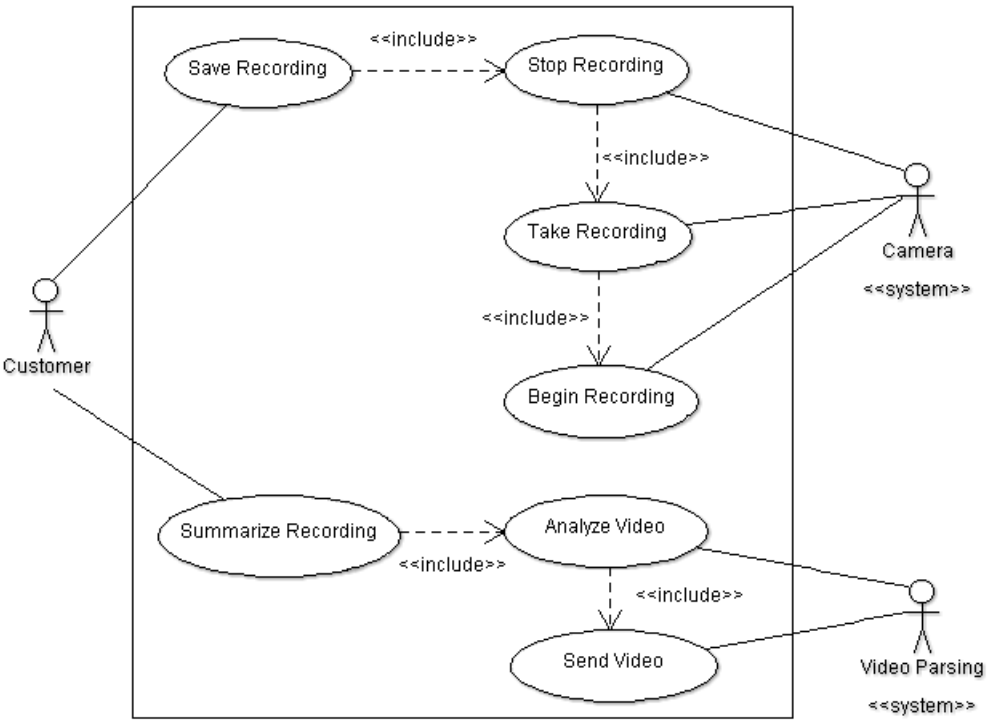


Figure 2: Videography

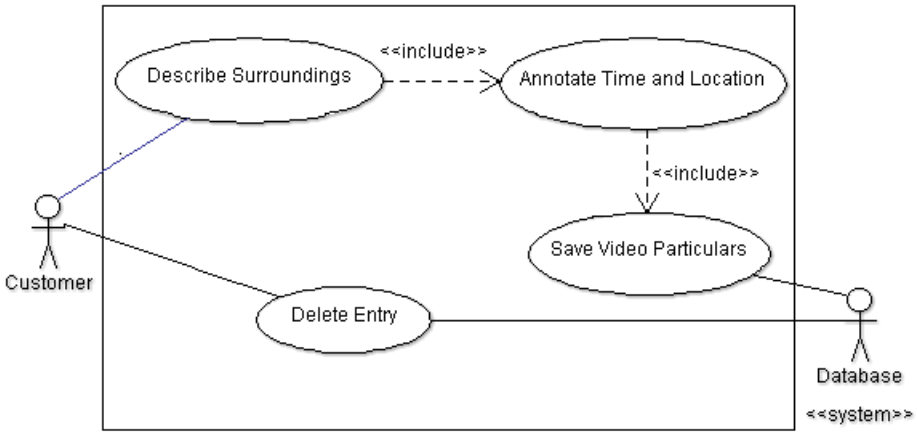


Figure 3: Storage

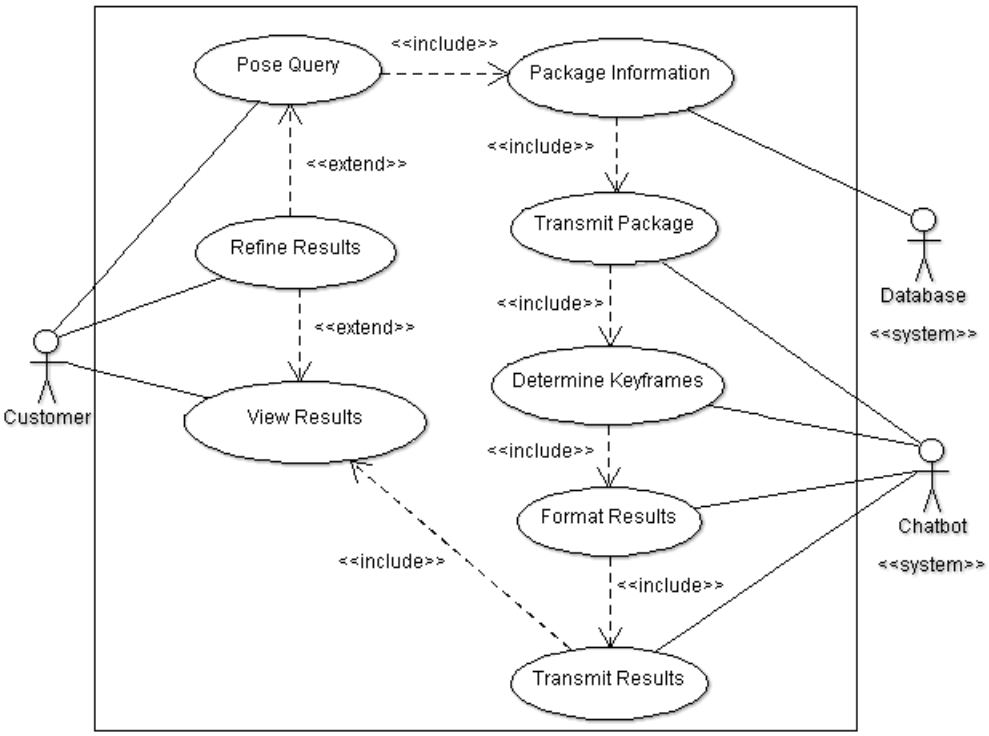


Figure 4: Question and Answer

2.4 Assumptions & Dependencies

The CogniOpen software application assumes the Actor has a working phone complete with functional camera, video-recording capabilities, and a working microphone and speaker. Development team is also assuming that the cognitive function of the Actor is not past understanding common operational parlance of the app; for instance, the Actor can identify functionality based on symbols – a play button means play; stop button means stop, and so forth. Project assumptions are that everyone will continue to contribute throughout the project lifecycle.

Additionally, CogniOpen is dependent on an Internet connection to ChatGPT and Amazon Web Services (AWS) Recognition AI services. Visual and audio recordings can still be recorded locally, but processing information requests is unavailable without Internet connection to live services. In other words, if the Actor’s internet is fine, but ChatGPT is down, then a request of “where are my classes?” cannot be completed for the video search use cases because the speak-to-text functionality is unavailable. Project dependencies are that the two project teams depend on each other to deliver the complete application as specified by the customer.

3 Specific Requirements

This section will provide the details needed to enable software development of each of the use cases identified above in Section 2.3.

3.1 Use-Case Reports

3.1.1 Initialize the Application

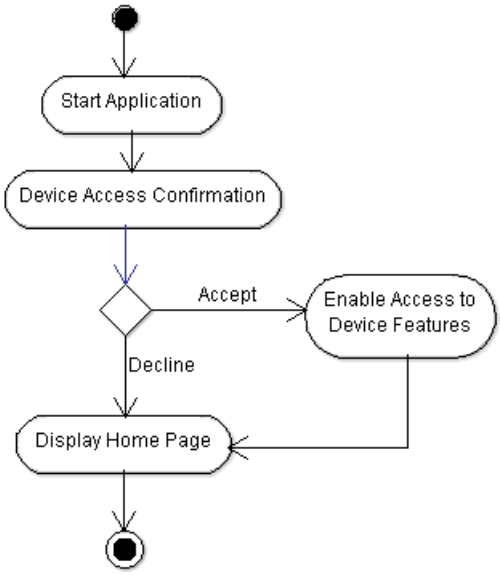


Figure 5: Initialization

Summary: Given the nature of the application, actors will have to agree to application permissions. Once the app has been initialized future launches of the application will go straight to the home page for CogniOpen which provides a high-level view of the applications capabilities organized in an easy to access manner.

Preconditions:

- The application is installed.

Triggers:

- The actor launches the application for the first time, after an update that requires them to agree to application permissions or has previously declined the application permissions.

Basic Course of Events (main scenario):
Scenario Preconditions: The actor has not started the application before, is opening the app after updates have occurred, or has previously declined the application permissions.

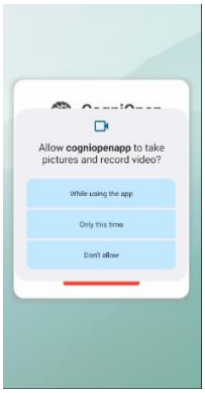
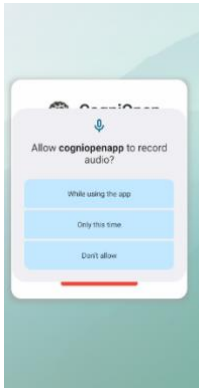
Actor	System	Screen
1. The actor starts the application		
	2. The system prompts the actor to allow CogniOpen app to take pictures and record video.	
3. The actor clicks “While using the app”		
	4. The system prompts the actor to allow CogniOpen app to record audio.	
3. The actor clicks “While using the app”		
	4. The system displays the login page of the application	

Table 4: Use Case, 1: Application Initialization - Main Scenario

Scenario Postconditions: Future uses of the application will skip the accepting step and go straight to the login screen.

Alternate Courses of Events (alternate scenarios):
Scenario Preconditions: The actor has not started the application before, is opening the app after updates have occurred, or has previously declined the application permissions.

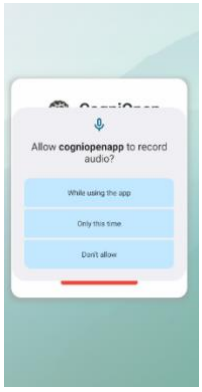
Actor	System	Screen
3. The actor selects “Only this time” or “Don’t allow”		
	4. The system prompts the actor to allow CogniOpen app to record audio.	
5. The actor selects “Only this time” or “Don’t allow”		
	6. The system displays the login page of the application	

Table 5: Use-Case, 1: Application Initialization - Alternate Scenarios (Decline permissions)

Scenario Postconditions: Future uses of the application will continue to bring up the permission dialogs before going to the login screen. The application will not be able to record audio, video or take pictures.

Postconditions:

- If the Actor granted all permissions, the application functionality is ready to use.

3.1.2 View Conversation in the Gallery

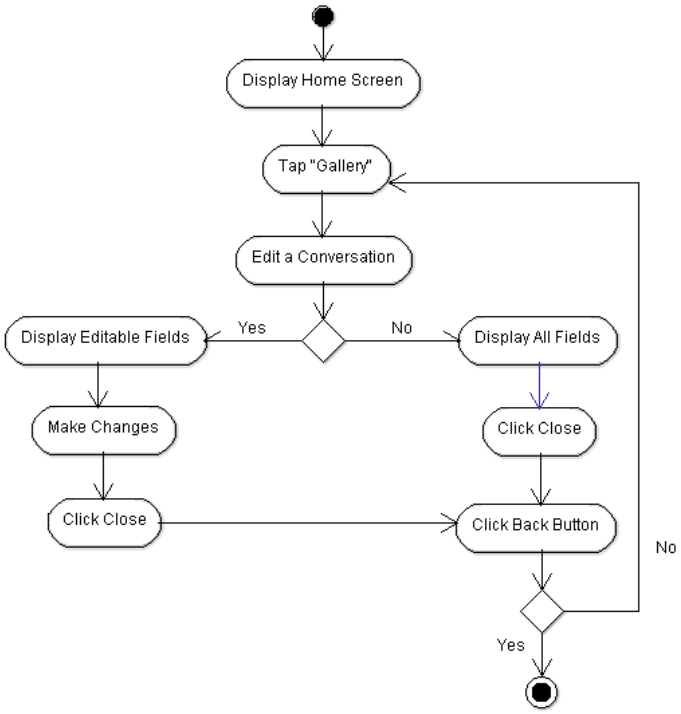


Figure 6: Anecdotes

Summary: Once conversations have been recorded, they will show up in the application gallery. Conversations stored here can be sorted by multiple factors such as: storage size, title, and date. Once accessed by the actor, they can choose to view the summarized version of the conversation (run through ChatGPT) or the full transcript.

Preconditions:

- The actor has recorded at least one conversation.

Triggers:

- The actor visits the Gallery screen.

Basic Course of Events (main scenario):
Scenario Preconditions: N/A

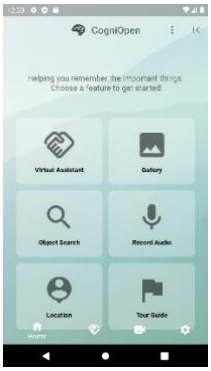
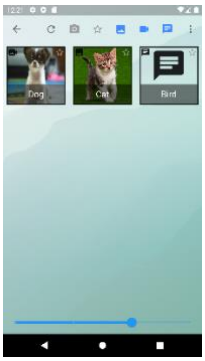
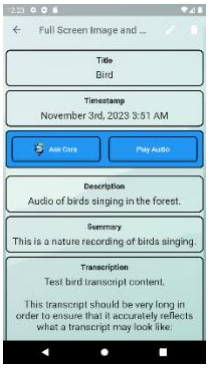
Actor	System	Screen
1. The actor clicks the Gallery button from the home screen		
	2. The system displays available Gallery items.	
3. The actor selects a conversation from the list to view details		
	4. The system shows the actor the title, timestamp, and description associated with the recording	

Table 6: Use-Case, 4: Search conversation history - Main Scenario

Postconditions:

- N/A

3.1.3 Set up Significant Objects

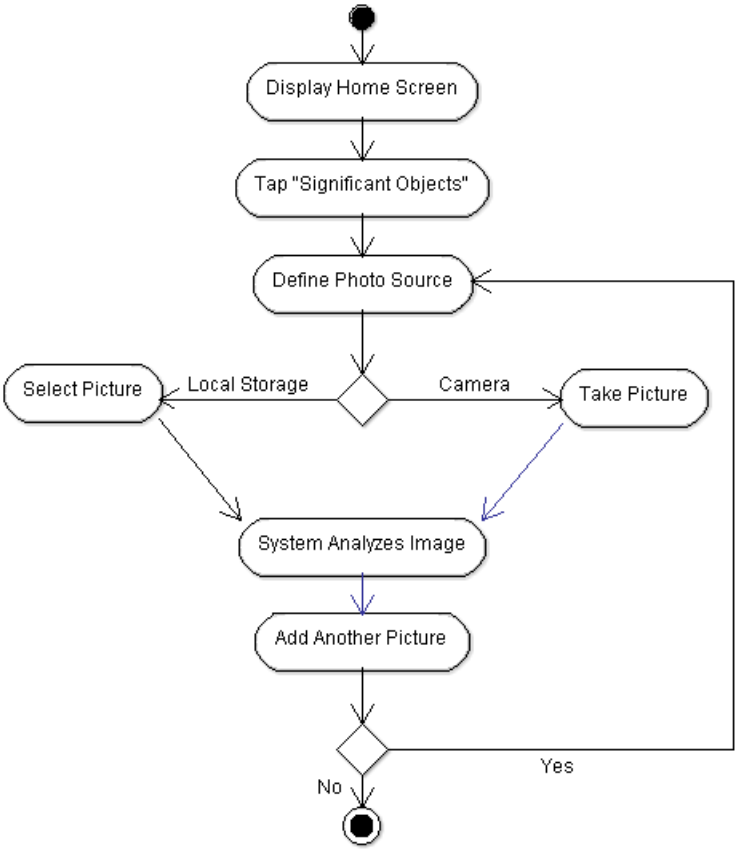


Figure 7: Keepsakes

Summary: This step is a part of initializing the app by the actor (caregiver or regular actor). The actor uploads images or takes a photo of significant objects to help aid the AI in recognizing objects that are significant to the memory-impaired individual. For example, if a photo was taken of the individual's wallet, glasses, or keys, then when reviewing footage to search for items, the objects marked as significant will have a higher weight in terms of being searched.

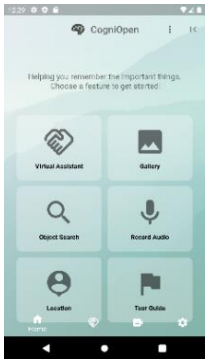
Preconditions:

- All licenses and agreements have been accepted and permissions have been granted to record video and audio.

Triggers:

- The actor accesses the option to `significant objects in the settings menu.

Basic Course of Events (main scenario):
Scenario Preconditions: Scenario Preconditions: N/A

Actor	System	Screen
1. The actor chooses the “Significant Objects” option in the main menu.		
	2. The system will allow the actor to upload an image or take a photo	
3. The actor clicks Camera		
	4. The system will open the camera to allow the actor to take a picture.	
5. The actor clicks on the camera to take a picture.		

Actor	System	Screen
	6. The system allows the user the option to go back, accept the picture or delete the picture.	
7. The actor selects the checkmark to accept the picture.		
	8. The system responds that the “image was uploaded successfully” and displays the new photo in the significant objects view.	

Table 7: Use-Case, 6: Significant Object Setup - Main Scenario

Scenario Postconditions: The system saves the object to the actor’s profile. Future video queries and searches like “Where are my glasses” will prioritize searching for significant objects.

Alternate Courses of Events (alternate scenarios):
Scenario Preconditions: N/A

Actor	System	Screen
7. The actor selects the back button.		

Actor	System	Screen
	8. The system discards the picture which was taken and navigates back to the camera screen.	

Table 8: Use-Case, 6: Significant Object Setup – Alternate Scenarios (Re-take Image)

Scenario Postconditions: N/A

Scenario Preconditions: N/A

Actor	System	Screen
7. The actor selects the cancel button.		
	8. The system discards the picture which was taken and navigates back to the significant objects screen.	

Table 9: Use-Case, 6: Significant Object Setup – Alternate Scenarios (Cancel Action)

Scenario Postconditions: N/A

Scenario Preconditions: N/A

Actor	System	Screen
3. The actor clicks Upload Image		

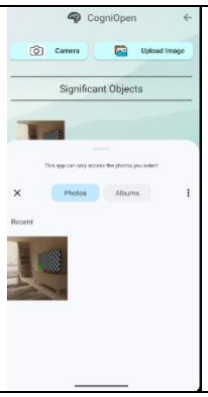
	4. The system will open the file browser to allow the actor to select a photo to upload.	
5. The actor selects a photo to upload		
	6. The system responds that the “image was uploaded successfully” and displays the new photo in the significant objects view.	

Table 10: Use-Case, 6: Significant Object Setup – Alternate Scenarios (Upload Image)

Scenario Postconditions: N/A

Postconditions:

- Significant items are now stored in the system for use when locating items.

3.1.4 Search in Location History

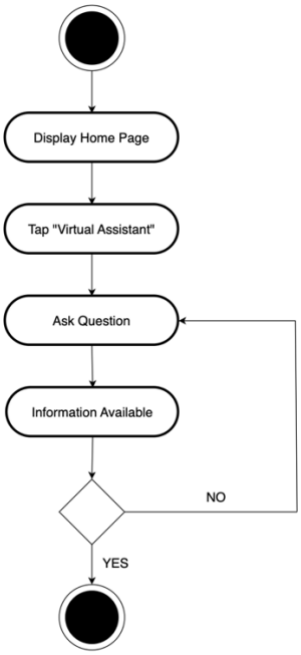


Figure 8: Tracking

Summary: Utilizing locations permissions, the application will log any movement by the actor in case they ask questions like “Where did I go yesterday” or “Have I been here before”. Conversations can also be tagged with locations to help the actor sort interactions.

Preconditions:
- The actor has a location visit logged.

Triggers:
- The actor selects this option from the home page

Basic Course of Events (main scenario):
Scenario Preconditions: N/A

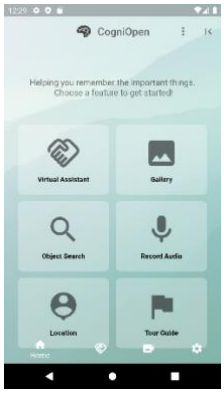
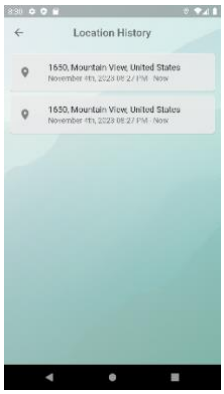
Actor	System	Screen
1. The actor clicks on the “Virtual Assistant” button in the main menu and asks “what did I do yesterday morning?”		
	2. The system displays significant events and locations for the morning using the data found inside the “Location” feature.	
3. The actor asks to hear or view what happened during his trip.		
	4. The AI assistant responds to the actor if data is available.	

Table 11: Use-Case, 7: Location History Search - Main Scenario

Scenario Postconditions: The actor is redirected to the location history page.

Postconditions:

- N/A

3.1.5 Record a video

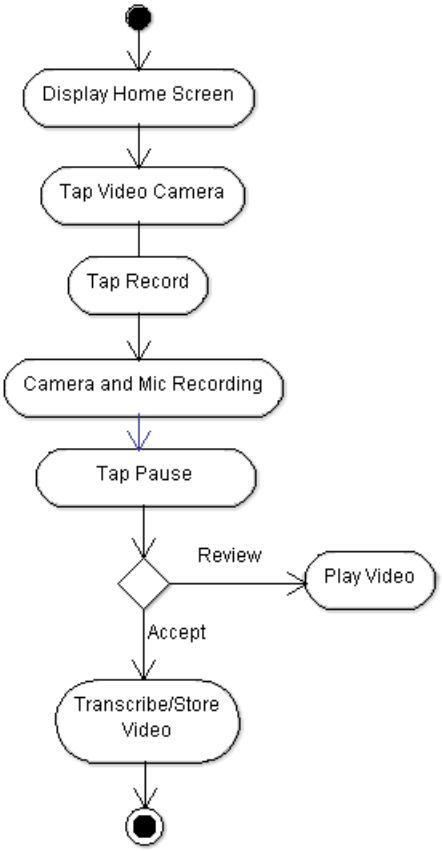


Figure 9: Recording

Summary: The purpose of this use case is to provide a detailed description of the steps involved in capturing videos using the CogniOpen application. Video recording is an essential tool for individuals with short-term memory loss to capture and retain important moments, receive instructions, or create reminders.

Preconditions:

- The application is granted permission to utilize the camera and storage functionalities of the device.

Triggers:

- The "Record Video" option can be accessed by the actor from the main menu or a specific section of the CogniOpen application.

Basic Course of Events (main scenario):
Scenario Preconditions: N/A

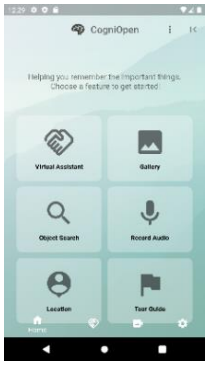
Actor	System	Screen
1.The actor chooses the "Record " option from the main menu.		
	2. The system launches the Camera screen.	
3. The actor clicks the red dot.		
	4.The system starts recording.	

Table 12: Use-Case, 8: Record a Video - Main Scenario

Scenario Postconditions: N/A

Postconditions:

- Video recordings will be sliced, timestamped, and saved throughout the recording timeframe. The recorded video(s) will be saved to the Gallery.

3.1.6 Pause Video Recording

Summary: The CogniOpen application allows actors to pause video recording.

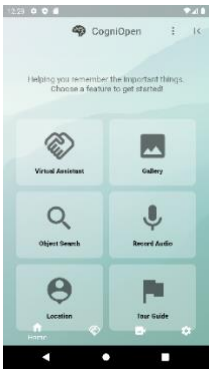
Preconditions:

- The application has been granted the required permissions to access the camera of the device to record videos and store them for future use.

Triggers:

- The actor can pause video recording through the Record Video screen.

Basic Course of Events (main scenario):
Scenario Preconditions: N/A

Actor	System	Screen
1.The actor clicks on the “Camera” option from the home screen.		
	2. The system shall display the current recording screen.	
3.The actor shall click the pause button.		

Actor	System	Screen
	4.The system shall tell the user “Recording stopped”, remove the red border from the view and display the red recording symbol.	

Table 13: Use-Case, 9: Pause Video Recording - Main Scenario

Scenario Postconditions: Video recording will be stopped, and current video will be timestamped and saved to the gallery.

Postconditions:

- The actor’s selection (paused) is applied and kept.

3.1.7 Locate an Object

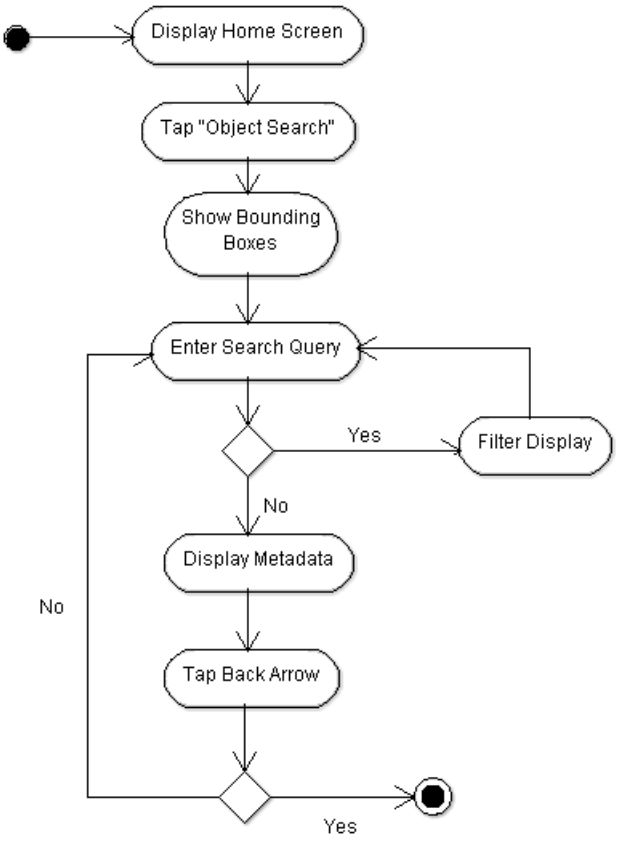


Figure 10: Inquiry

Summary: CogniOpen users suffering with short-term memory loss frequently misplace important items, and this feature is intended to provide them with a quick option to locate these items.

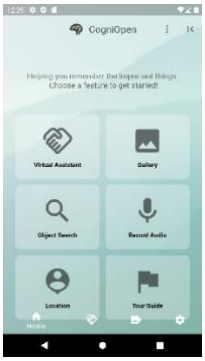
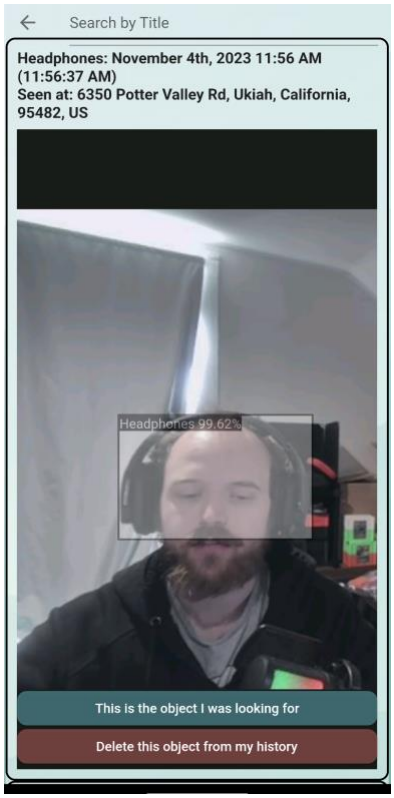
Preconditions:

- The actor has authorized the appropriate permissions for location tracking and camera access.
- The actor has previously recorded photographs or videos of the item.

Triggers:

- The actor will initiate a request for item location assistance by accessing the CogniOpen application.

Basic Course of Events (main scenario):
Scenario Preconditions: N/A

Actor	System	Screen
1. The actor selects the “Object Search” from the home screen.		
	2. The system displays the object search screen.	
3. The actor types “glasses" in the search bar		

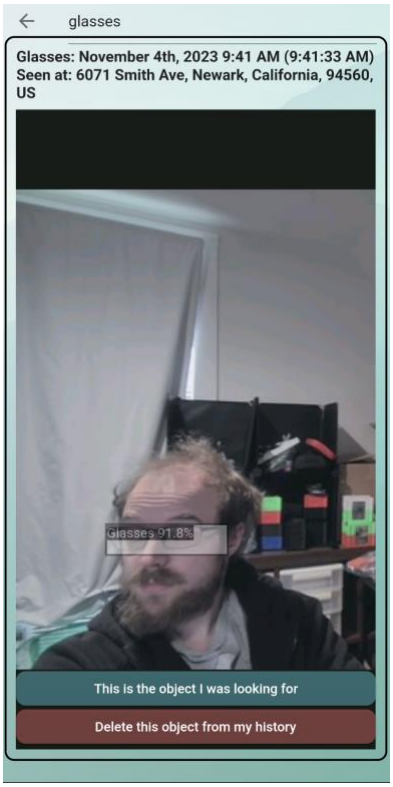
Actor	System	Screen
	4. The system shall display items recognized as “glasses”. It will also show the time spotted, along with the associated address	

Table 14: Use-Case, 11: Ask Assistant to Locate Item - Main Scenario

Scenario Postconditions: N/A

Postconditions:

- The Actor successfully locates the specified item.

3.1.8 View Media in Gallery

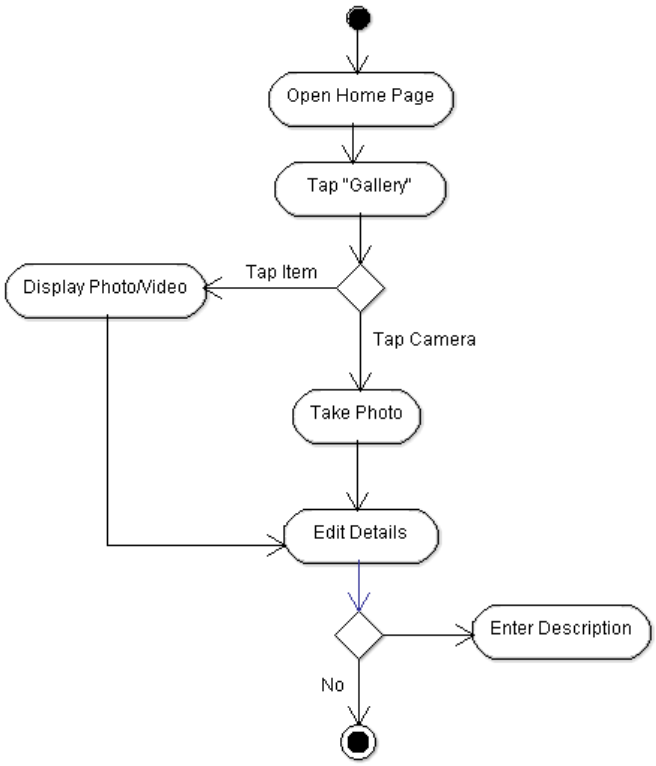


Figure 11: Media Library

Summary: The gallery is an area for the actor to view video recordings, photos or conversations.

Preconditions:

- The actor has recorded a conversation and/or video previously.

Triggers:

- The actor selects the Gallery menu item from the home screen.

Basic Course of Events (main scenario):
Scenario Preconditions: N/A

Actor	System	Screen

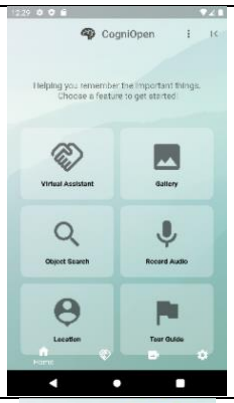
1. The actor selects "Gallery" from the home screen.		
	2. The system displays the photo/video/conversations	
3. The actor clicks on a photo item to view details.		
	4. The system shall display applicable data to the actor.	

Table 15: Use-Case, 14: View Media in Gallery - Main Scenario

Scenario Postconditions: N/A

Alternate Courses of Events (alternate scenarios):
Scenario Preconditions: The system has previously recorded video(s).

Actor	System	Screen
3. The actor clicks on a video item to view details.		

	4. The system shall display applicable data to the actor.	

Table 16: Use-Case, 14: View Media in Gallery - Alternate Scenarios (View video)

Scenario Postconditions: N/A

Scenario Preconditions: The system has previously recorded conversation(s).

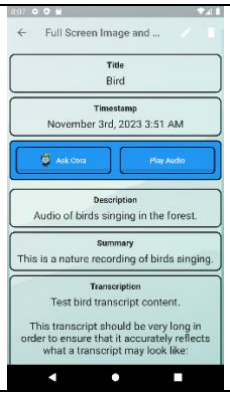
Actor	System	Screen
3. The actor clicks on a conversation item to view details.		
	4. The system shall display applicable data to the actor.	

Table 17: Use-Case, 14: View Media in Gallery - Alternate Scenarios (View conversation)

Scenario Postconditions: N/A

Postconditions: N/A

3.1.9 View Timeline

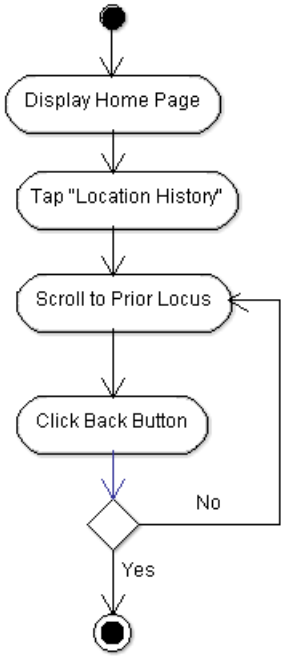


Figure 12: Reminisce

Summary: To aid memory-impaired individuals, the application allows actors to look at their timeline at any given time. This feature is dependent on location services being enabled.

Preconditions:

- The actor had location services enabled in their settings.

Triggers:

- The actor selects the Location menu item

Basic Course of Events (main scenario):
Scenario preconditions: Location services are enabled.

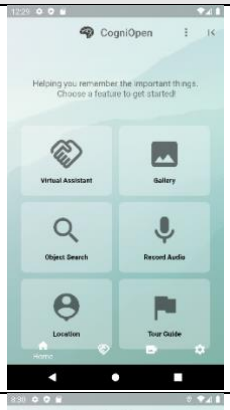
Actor	System	Screen
1. The actor selects the “Location” option from the main menu.		
	2. The system shall show the Location screen.	

Table 18: Use-Case, 16: View Timeline - Main Scenario

Scenario Postconditions: N/A
Postconditions: N/A

3.2 Supplementary Requirements

- This application should support the ability to upload videos in the following formats: .mp4
- This application should support the ability to upload photos in the following formats: .png, .jpg
- This application should provide an undo/redo feature that allows the actor to undo or redo the last action taken.
- This application will be available on both android and apple mobile devices.
- This application should maintain a consistent and intuitive design across all screens and both android and apple mobile devices.

4 Non-functional Requirements

Rather than specifying functionality, the non-functional requirements of the project describe how the system should behave. These requirements outline the characteristics, performance expectations and constraints that guide the application. Performance, security, reliability, scalability, and usability are key aspects which are critical in the development of a user-friendly and effective solution.

4.1 Performance

- NFR-Perf-1: Start-up Time – The application should load within 10 seconds of it being opened.
- NFR-Perf-2: Response Time Navigation - The application should respond to user interactions within 2 seconds for system navigation.
- NFR-Perf-3: Response Time Setting Reminders – The application should respond to user interactions within 2 seconds for setting reminders.

4.2 Security

- NFR-Sec-1: Data Transfer - All site data transferred to external services must be conducted via encrypted tunnels (i.e., HTTPS).
- NFR-Sec- 2: Data Encryption - User data, including personal and medical information, should be encrypted both during transmission and storage to prevent unauthorized access.
- NFR-Sec-3: Authentication - Robust user authentication mechanisms, including biometric options, should be implemented to ensure only authorized users can access the app.
- NFR-Sec-4: Authorization Levels - Different levels of authorization should be established to manage access to sensitive features and data, such as caregiver accounts.
- NFR-Sec-5: Privacy Compliance - The app should adhere to relevant data protection regulations, such as GDPR or HIPAA, depending on the jurisdiction and data processed.
- NFR-Sec-6: Secure Development - Adhere to secure coding practices to minimize vulnerabilities and potential entry points for cyberattacks.

4.3 Reliability

- NFR-Rel-1: Uptime and Availability - The application should have a minimum uptime of 99% to ensure consistent access for users.
- NFR-Rel-2: Backup and Recovery: Regular automated backups should be performed to facilitate data recovery.
- NFR-Rel-3: Offline Use Data Access - Local data retrieval functionality still works properly in circumstances of low network connectivity or no network connection at all.
- NFR-Rel-4: Offline Use Recording - Recording functionality still works properly in circumstances of low network connectivity or no network connection at all.

4.4 Scalability

- NFR-Sca-1: User Growth - The app should handle a minimum of 10,000 concurrent users without significant degradation in performance
- NFR-Sca-2: Server Scalability - The backend infrastructure should be designed to scale horizontally, adding additional resources as demand increases.
- NFR-Sca-3: Database Scalability - The database should be capable of handling increased data load and user interactions without compromising performance.

4.5 Usability

- NFR-Usa-1: Speech Processing – Speech-to-text for audio/video processing displays message within 2 seconds, after completion.
- NFR-Usa-2: Video Processing - Video processing displays a message within 2 seconds, after completion.
- NFR-Usa-3: Status Messages - Processing requests will display status message during and after process completion.
- NFR-Usa-4: User Guidance - Help documentation for users accessing/navigating core functionalities.