DREAM TEAM

TECHNOLOGY SOLUTIONS

CogniOpen Software Application

User Guide

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1 Introduction

This User Guide (UG) document provides users with comprehensive technical instructions and information to effectively use the CogniOpen software application (also referred to as “the application”). The application itself was created by Team A (Dream Team Technology Solutions, DTTS) and Team B of the University of Maryland Global Campus (UMGC) software engineering capstone course (SWEN 670) Fall 2023 cohort. This User Guide document was prepared for by Team A and largely covers application features and functionality developed by Team A; it complements the accompanying User Guide document prepared for by Team B, which collectively covers all features and functionality for the application.

1.1 Purpose

The purpose of this User Guide document is to provide technical guidance to users on how to use the CogniOpen software application system. This document provides context, instructions, and information, covering all notable aspects of the application to ensure users are always well-equipped for a seamless experience; it serves as a living resource to assist users throughout the lifetime of the application, providing ongoing support and guidance. This User Guide document offers users a comprehensive understanding of the application's goals, capabilities, technical prerequisites, installation and launch procedures, interface navigation, detailed feature guides, and troubleshooting assistance.

1.2 Intended Audience

This User Guide document is intended to be used by all users of the CogniOpen software application. The primary application users include individuals with memory impairments and those seeking to assist those with memory impairments (caregivers, family members, and healthcare professionals). Other users of the application include anyone interested in utilizing the software application to enhance memory and daily living. It is designed to cater to a wide range of users, ensuring they can effectively utilize the application's features and functionalities.

1.3 Document Conventions & Organization

The User Guide document for the CogniOpen software application is thoughtfully organized into several sections, each meticulously crafted to facilitate a structured and user-friendly understanding of the application's requirements, features, and more. These sections have been designed with the user in mind, ensuring ease of navigation and reference as needed. They include the following:

- Introduction: This section provides an overview of the document's purpose, intended audience, and organization, effectively setting the context for users' exploration of the application.

- System Capabilities: In this section, users can gain a comprehensive understanding of the capabilities and general description of the application.

- Technical Specifications & Requirements: To ensure a seamless application experience, this section guides users through the process of verifying that their system meets the hardware, software, and network requirements necessary for using the application effectively.

- Getting Started: For those who are new to the CogniOpen software application, this section offers comprehensive guidance on the installation and initial launch of the application, as well as managing permissions.

- Screens: In this section, users can acquaint themselves with the various screens and interfaces within the application, with each screen described in detail to provide clarity.

- Step-by-Step Guide: In this section, users will find detailed step-by-step instructions for common user actions within the application, making it a valuable resource for performing specific tasks or actions.

- Troubleshooting: In the event of issues or challenges during application usage, users are encouraged to refer to this section for troubleshooting guidance.

For new users, it is recommended to start by reading this entire User Guide document to establish a comprehensive understanding of the CogniOpen software application. Afterward, users can refer to this document and navigate through the sections as needed for their specific requirements and information. This approach will enable users to effectively harness the information within this user guide to maximize their use of the CogniOpen software application.

1.4 Project Document Suite

This User Guide document 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

1.5 References

N/A

1.6 Terms, Abbreviations, & Acronyms

Term	Definition
AI	Artificial Intelligence
App	Application
Cora	CogniOpen Remote Assistant
GB	Gigabyte
GHz	Gigahertz
iOS	iPhone Operating System
Mbps	Megabit per second
RAM	Random Access Memory
Wi-Fi	IEEE 802.11b Direct Sequence (aka ‘Wireless Fidelity’)

Table 2: Terms, abbreviations, and acronyms

2 System Capabilities

2.1 Overview

CogniOpen is a powerful and user-friendly application designed to assist individuals with short-term memory loss and enhance their daily living. This section provides an overview of the key capabilities and functionalities of the application.

2.2 Intended Users

CogniOpen application is designed for a diverse range of users who can benefit from its features, including:

- Individuals with short-term memory impairments: The primary users of this application are individuals who experience short-term memory loss due to various medical conditions. This application helps them record and retrieve essential information to improve their memory and overall quality of life.
- Caregivers and family members: Caregivers and family members play a vital role in supporting individuals with memory impairments. They can use the application to assist users, manage reminders, and facilitate better communication with their loved ones.
- Healthcare professionals: Healthcare professionals, such as doctors, therapists, and nurses, can recommend or utilize the application as part of their care plans for patients with memory issues.
- Anyone interested in memory enhancement: Even if you don't have memory impairments, you can use CogniOpen application to capture and organize important information, set reminders, and easily recall past events.

2.3 General Description

CogniOpen is a versatile and user-centric mobile application available for both Android and Apple devices. It offers a wide range of features to assist users in their daily lives and memory-related needs.

Key Features:

Recorded Videos: Users can capture and store videos to preserve important moments, instructions, and reminders. Videos can be easily reviewed from the Gallery menu.

Voice Recording: The application allows users to record audio notes and conversations. This feature is particularly useful for recalling past discussions and important information.

Passive Video Recording Mode: A unique feature that continuously records conversations and interactions in real time. This helps individuals remember significant events in their daily lives.

Ask Assistant: Users can ask questions about previously recorded events, and the AI assistant, Cora, provides answers, aiding in memory recall.

Location Services: The application enables location tracking, helping users find misplaced items and answer questions like “Where was I yesterday?”

Media Gallery: Users can view their photos and videos, add descriptions, and organize their media library for easy access and reminiscing.

Timeline Viewing: Users can view their timeline to revisit past events, aided by the application’s location services.

3 Technical Specifications & Requirements

To ensure the most optimal performance of the CogniOpen application, some specifications and requirements are recommended.

3.1 Hardware

- Device: Smartphone or tablet with a front-facing camera
- Operating System: iOS 13.0 or later / Android 8.0 or later
- Processor: Quad-core 1.8 GHz or equivalent
- RAM: 2 GB or higher
- Storage: 16 GB available storage

3.2 Software

- iOS: iOS 13.0 and later versions
- Android: Android 8.0 and later versions

3.3 Network

- Minimum bandwidth of 5 Mbps
- Stable Wi-Fi connection

4 Getting Started

4.1 Installing the Application

Currently, this project is a prototype, and no release builds have been published at this time. In the future, the application could be available on the published app stores for iOS and Android devices.

Until that later date when there is a published release version of this application, the current installation steps are in the “Deployment and Operations Guide” (aka Runbook) for developers to experiment and launch the application. Please reference that document for installing the application.

When this application is available on the app store(s), these instructions can be utilized:

iOS Devices:

- Open the App Store on your iOS device
- In the search bar, type CogniOpen
- Locate the app in the search results and tap "Install"
- Once the installation is complete, the app icon will appear on your home screen

Android Devices:

- Open the Google Play Store on your Android device
- In the search bar, type CogniOpen
- Locate the app in the search results and tap "Install"
- Once the installation is complete, the app icon will appear in your app drawer

4.2 Launching the Application

Once the CogniOpen application has been installed onto your mobile device, it can be launched and accessed by tapping on the application icon. Or if you are still on the store application, just press the open button to launch the application. This will load the application and bring the user to the Login page of CogniOpen.

4.3 Permissions

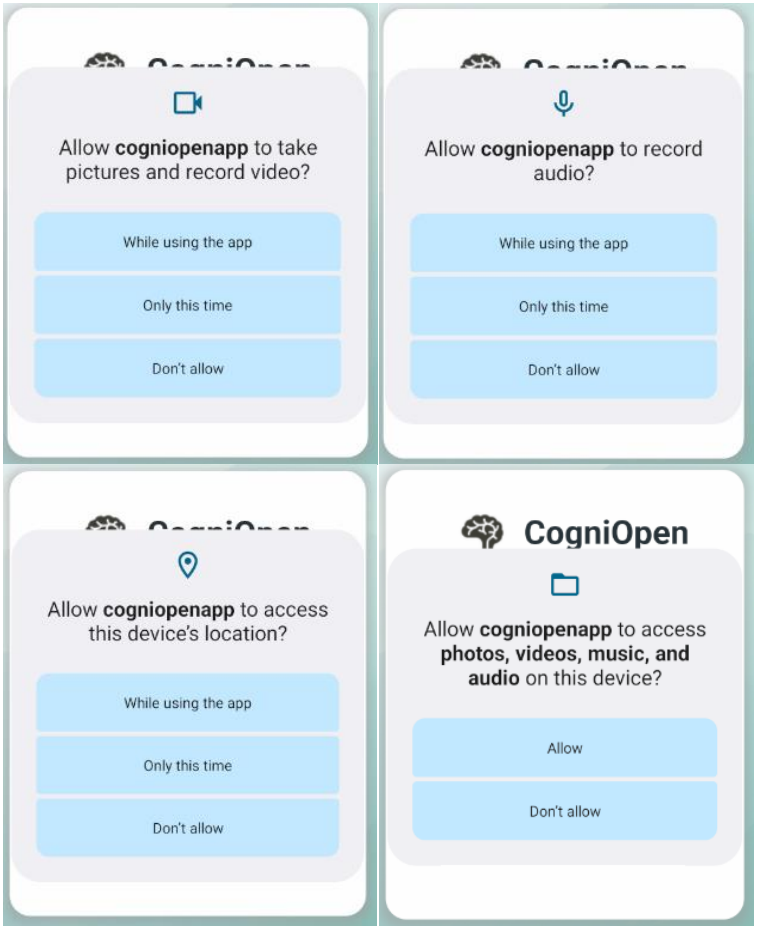

Figure 1: CogniOpen Application Permissions

Upon first launch, you will be prompted to grant access to the following:

- Camera: Enable the device's camera for object recognition, photo capturing and video recording.
- Microphone: Enable device's audio for recording conversations, video recording and verbal communication with the virtual assistant feature.
- Location Services: Enable device's location services to assist in tracking the location of objects and reporting the location of the device at any given time and date.
- Local File Access: Enable access to local media storage. The application makes heavy use of local storage with media created within the application.

Please ensure you grant these permissions for the application to work as intended. You can manage these permissions in your device settings.

5 Screens

5.1 Home Screen

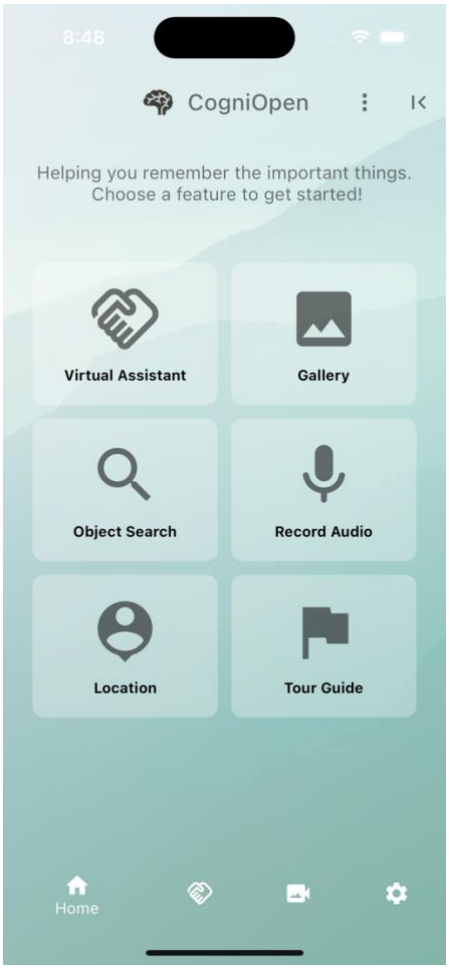

Figure 2: CogniOpen Home Screen

The home screen is the main screen in CogniOpen, providing access to all the major features within the application. Six main features can be accessed from the corresponding buttons and are as follows: (1) Virtual Assistant, (2) Gallery, (3) Object Search, (4) Record Audio, (5) Significant Objects and (6) Tour Guide. Additionally, the user can also access the Settings and Profile screens.

5.2 Tour Guide Screen

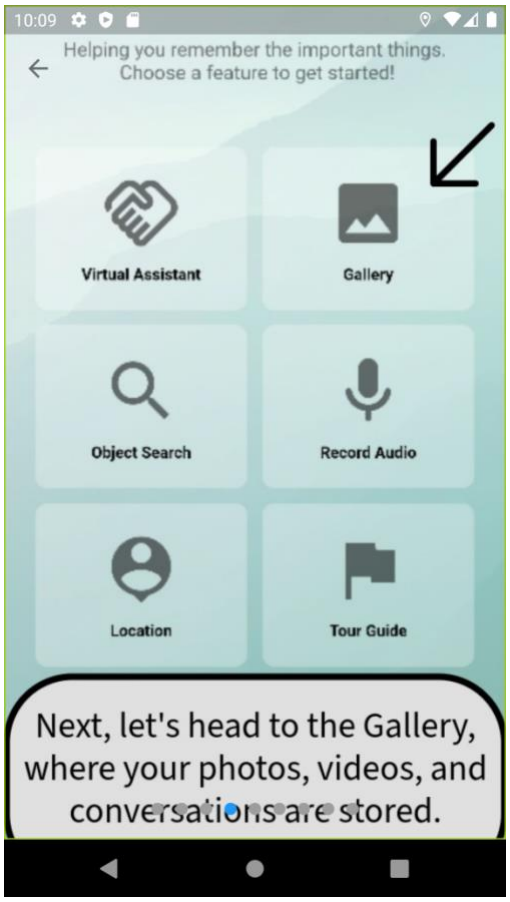

Figure 3: CogniOpen Tour Guide Screen

The tour guide screen takes the user on a virtual tour of CogniOpen. The user can scroll through images explaining the different features of the application.

5.3 Virtual Assistant Screen

Figure 4: CogniOpen Virtual Assistant Screen

The virtual assistant screen provides an interface for the actor to communicate with an AI-powered companion. The AI assistant, known as Cora, can access the media in the gallery through queries. For example, the user may ask “What was the name of my childhood dog?” and the AI assistant will respond with the correct information, if available.

5.4 Gallery Screen

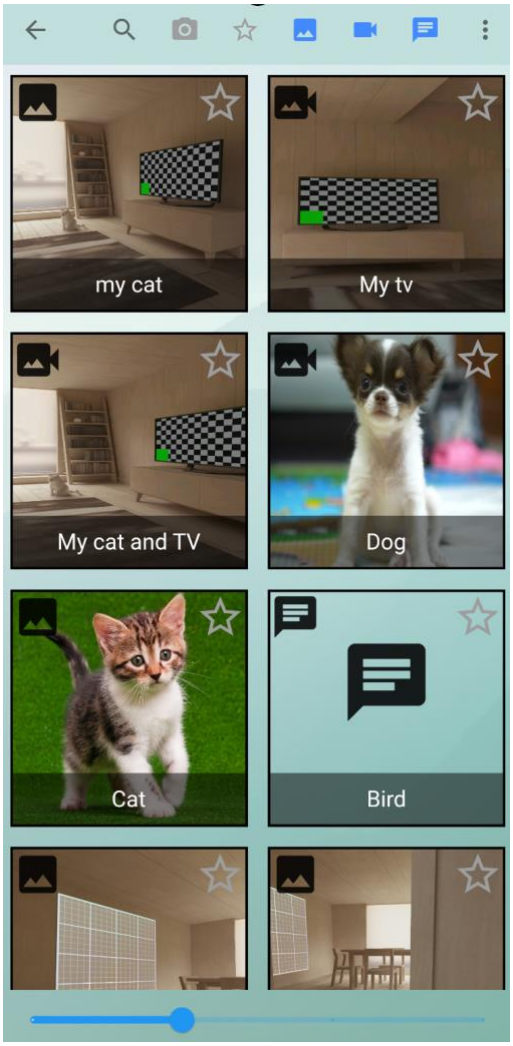

Figure 5: CogniOpen Gallery Screen

The gallery screen holds all the user's multimedia, such as audio recordings, video recordings and photos. This multimedia is used by the AI Assistant, Cora, to answer questions proposed by the user. Additionally, the user can tap on the available medium to see its details (such as title, timestamp, description, and more).

5.5 Audio Record Screen

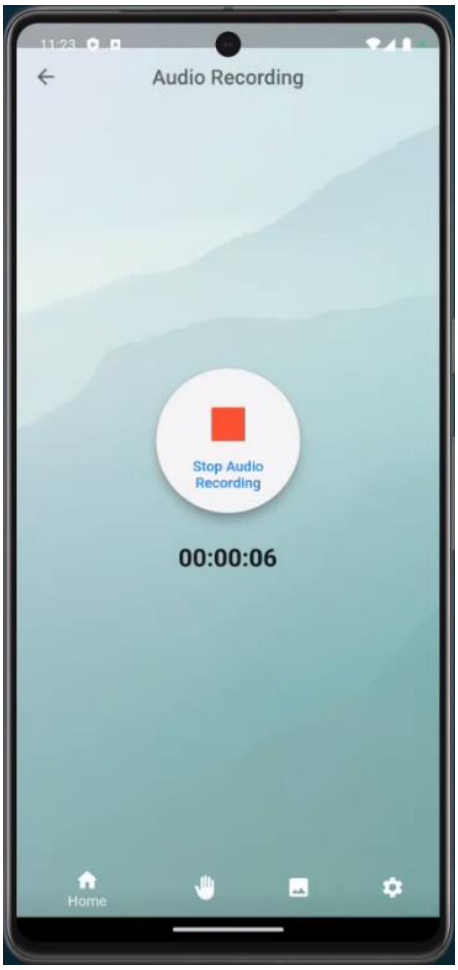

Figure 6: CogniOpen Audio Record Screen

The audio record screen automatically begins an audio recording when the screen is initiated. The user can then choose to save or delete the recording. Recordings saved will be added to the application's gallery.

5.6 Video Record Screen

Figure 7: CogniOpen Video Record Screen

The video record screen shows the application's current recording through the video camera on the device. The user is able to pause recordings on this screen. Recordings made on CogniOpen are saved in the gallery.

5.7 Object Search Screen

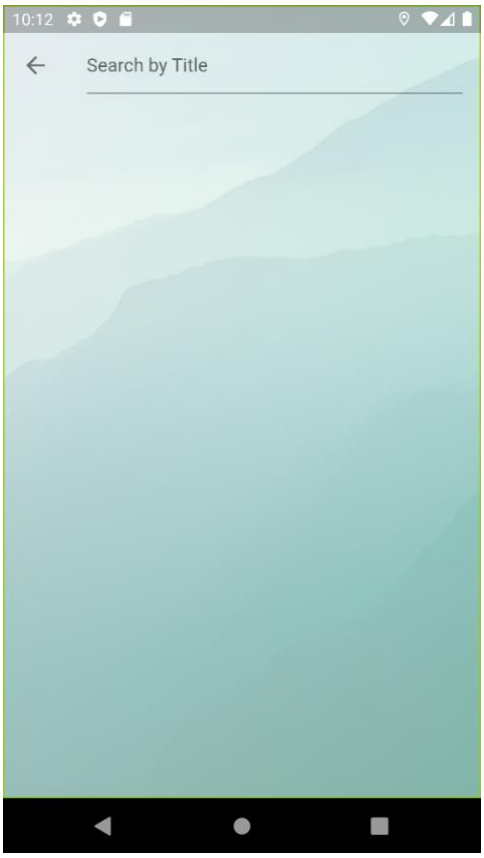

Figure 8: CogniOpen Object Search Screen

The object search screen allows the user to search for an object in the application's media. For example, the user may search for glasses, and the application will return the last time glasses were recorded in a video.

5.8 Profile Screen

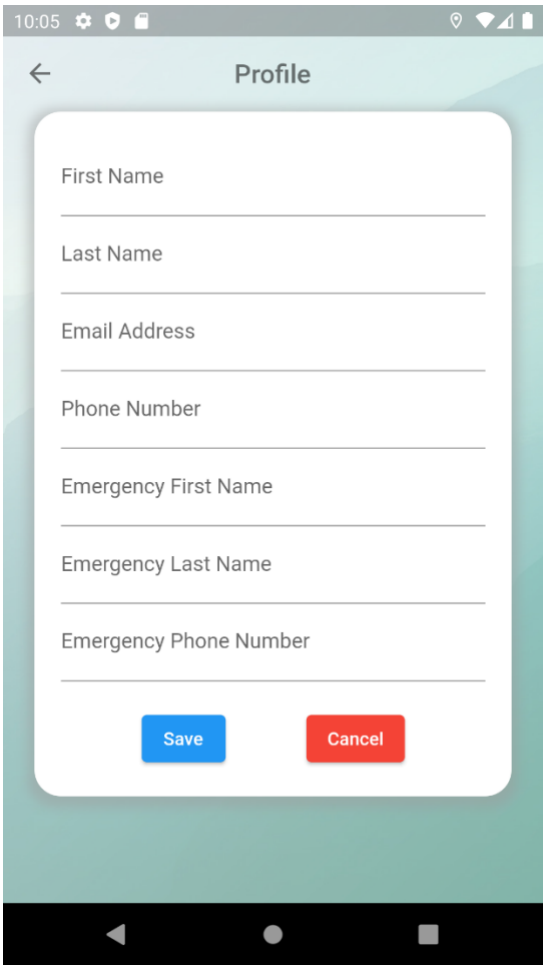

Figure 9: CogniOpen Profile Screen

The profile screen displays the user's profile information, including first and last name, email address, phone number, and emergency contact information. The user can edit any of the fields to update their information.

5.9 Location Screen

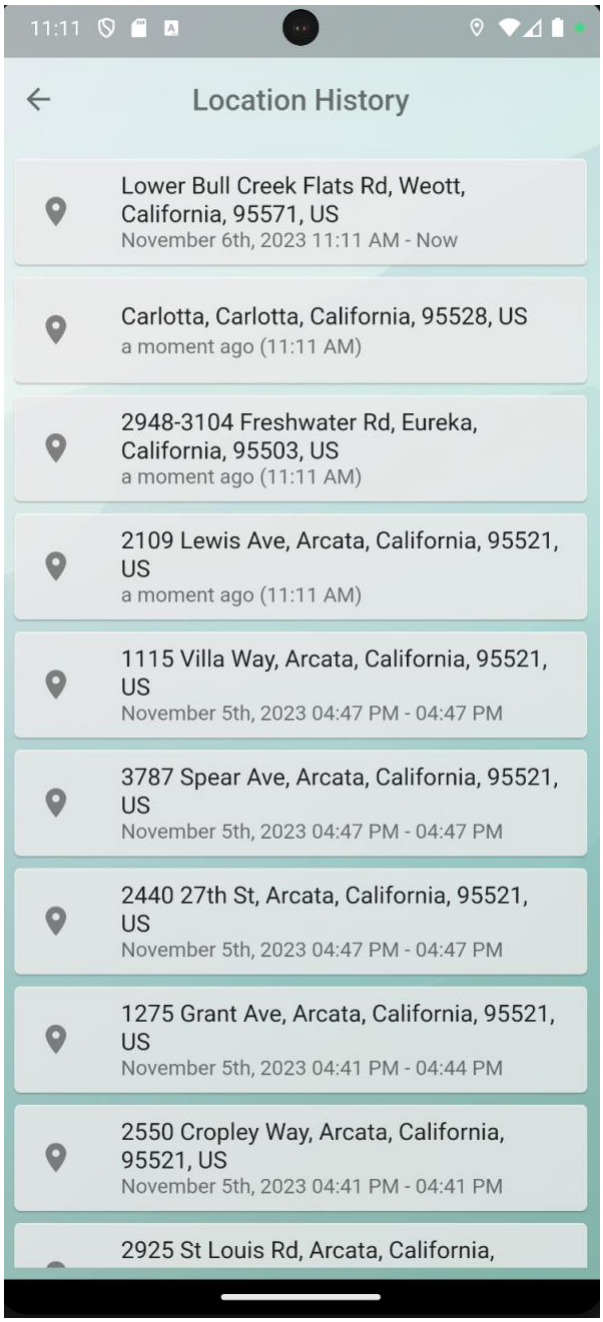

Figure 10: CogniOpen Location History Screen

The location screen displays the user's recent locations, including the date, and duration. These are stored from newest to oldest. These locations are used by the AI assistant to respond to user questions while in the "Virtual Assistant" screen.

6 How to Use Each Screen

6.1 Login Screen

1. Open the application by tapping on the CogniOpen icon.
2. Select the create account button.
3. Add the corresponding information.
4. Finalize account creation.

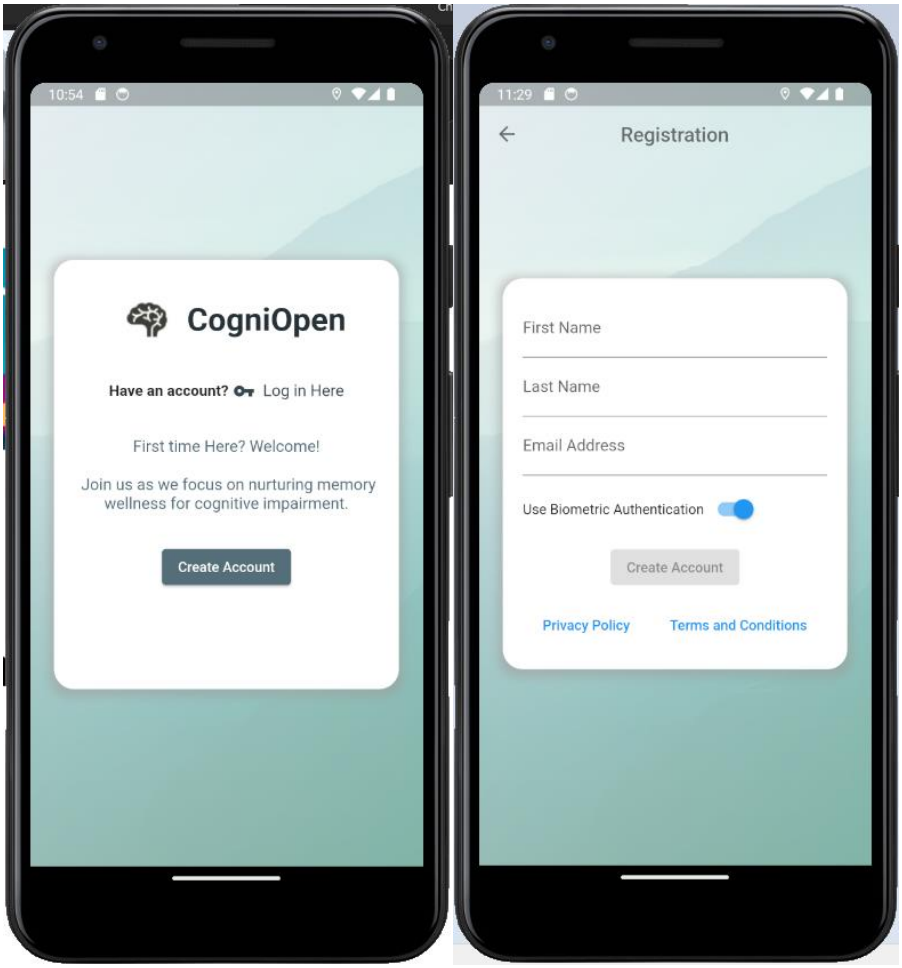

Figure 11: CogniOpen Account Registration

6.2 Gallery Screen

The gallery screen is where all media items are located. In this screen, users can playback videos and audio files that were previously recorded on the application. Photos taken on the application can also be seen in this screen.

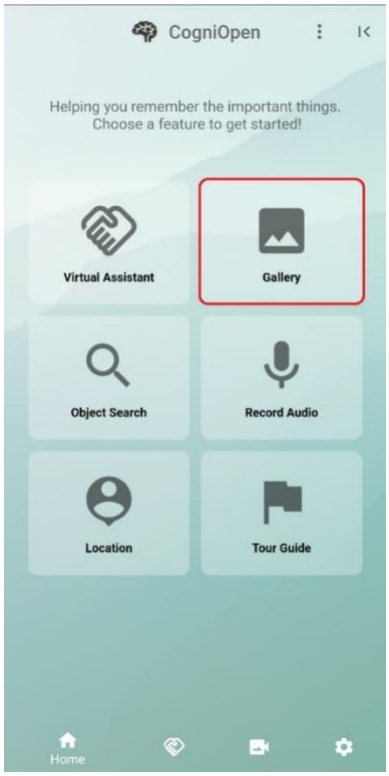

Figure 12: CogniOpen Gallery Screen

6.2.1 Features of the Gallery Screen (top app bar and slider)

Figure 13: CogniOpen Gallery Screen Slider

At the bottom of the gallery screen is the slider that adjusts the sizes of the media items. Sliding the bar to the right shrinks the size, and sliding it to the left enlarges the size.

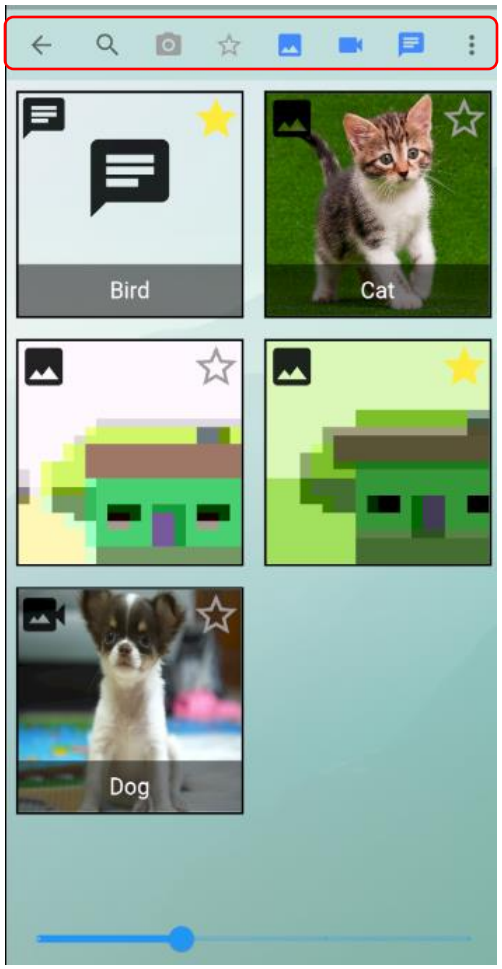

Figure 14: CogniOpen Gallery Screen App Bar

At the top of the gallery screen is an app bar that has multiple features to help facilitate the use of the gallery. On the far left is the Return Icon that returns the user to the home screen.

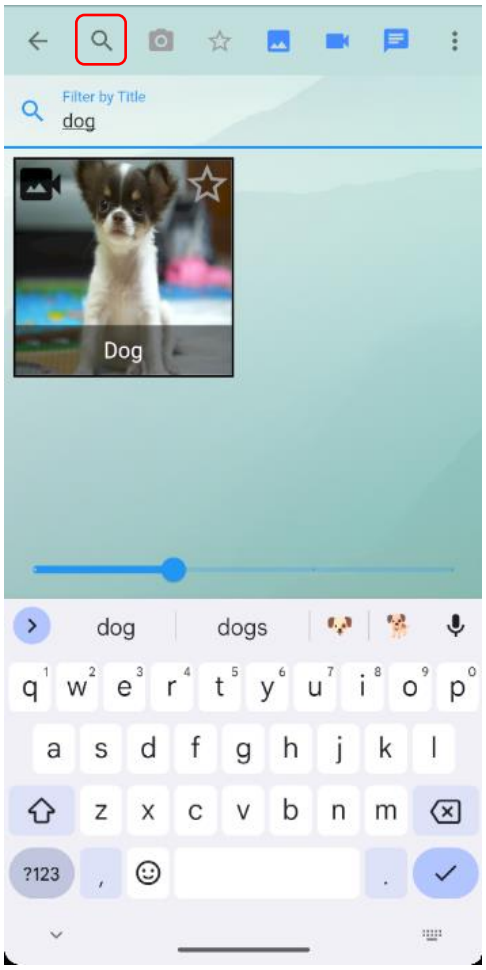

Figure 15: CogniOpen Gallery Screen Filter Search

The Search Icon allows the user to search any media item in the gallery. For example, if the user types in ‘Dog’ then the gallery screen will populate with the items that have the word ‘Dog’ in the title.

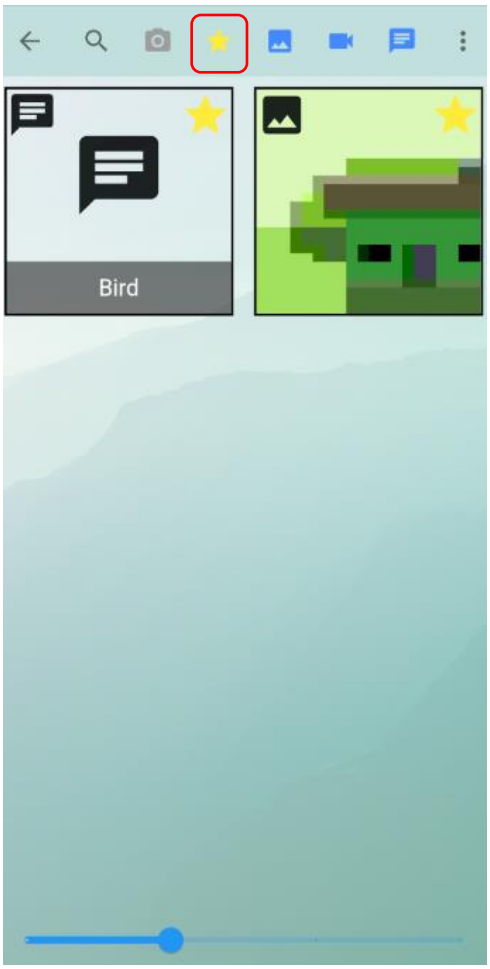

Figure 166: CogniOpen Gallery Screen Favorite Icon

The Star Icon filters out the items in the gallery that are not favorites and displays only the items that are tagged with the Favorite tag.

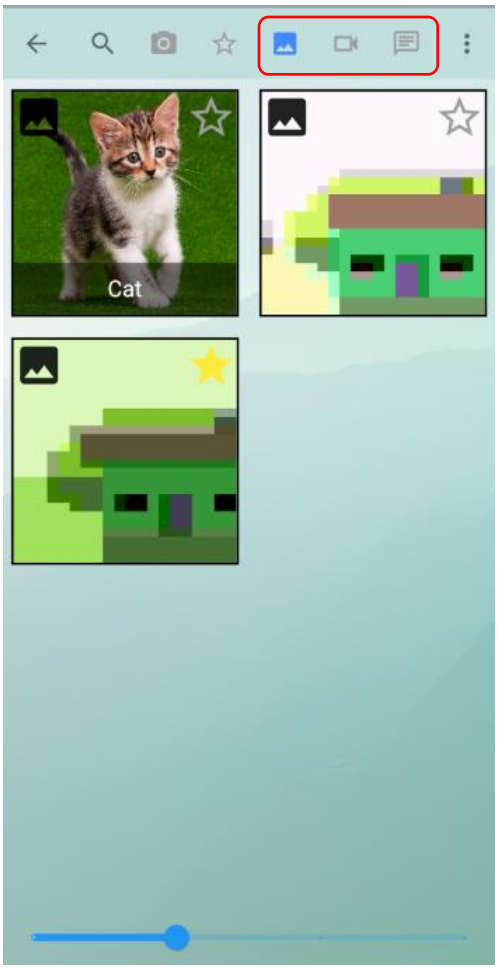

Figure 177: CogniOpen Gallery Screen Media Filter Icons

The Image, Video and Audio Icons help to filter out specified items. For example, if the user highlights only the Image Icon, only the photos in the gallery will display. If a user selects and highlights both Image and Audio Icon then only the items tagged as photos and audio will display.

6.2.2 Adding photos (clicking top camera button)

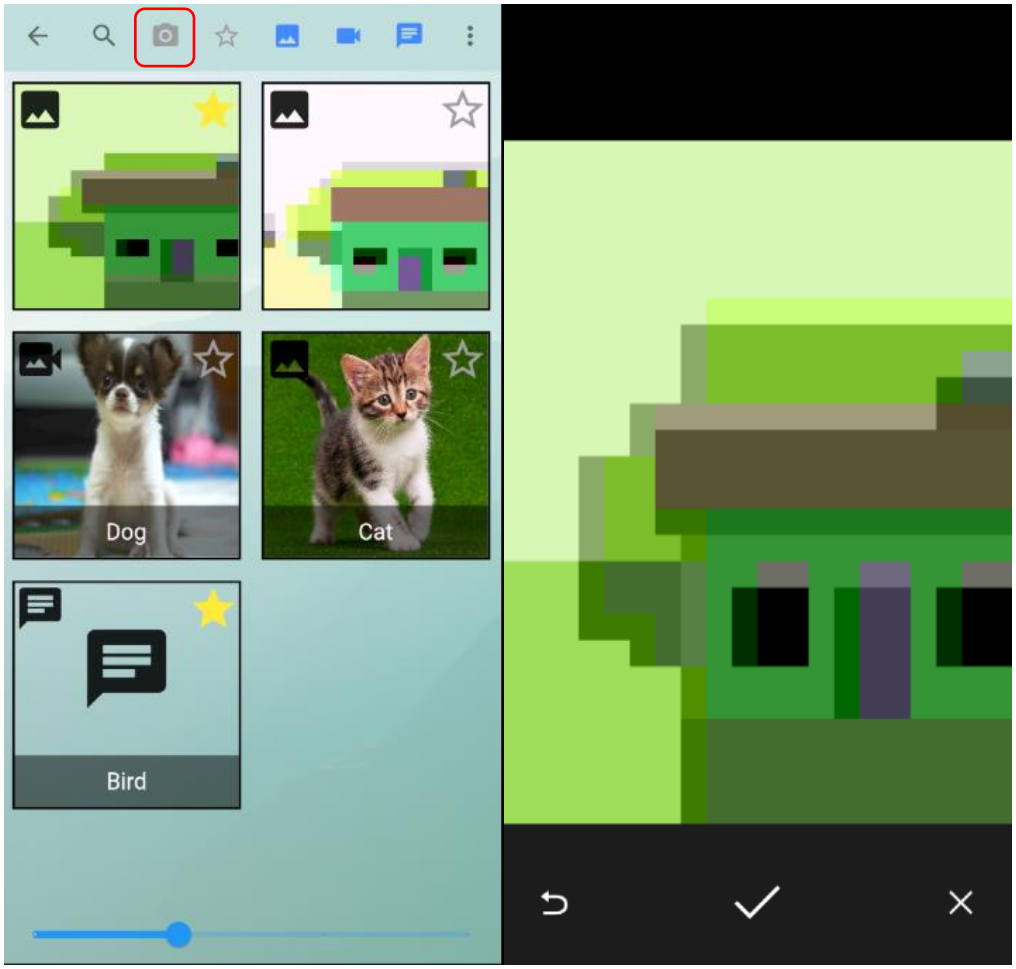

Figure 188: CogniOpen Gallery Screen Camera Icon

The Camera Icon takes the user to the camera to take a new picture. Once the photo is taken, the user is returned to the gallery screen where the new photo will be displayed with the rest of the media items.

6.2.3 Viewing full Media information (clicking a media object)

Figure 199: CogniOpen Gallery Screen Item Details

To enlarge the media item, the user can tap on the desired item in the gallery screen. This will open a screen with only the respective media item and display its specific details. These details can include the title and description of the item as well as a timestamp and address of when and where the item was added.

6.2.4 Editing a media object

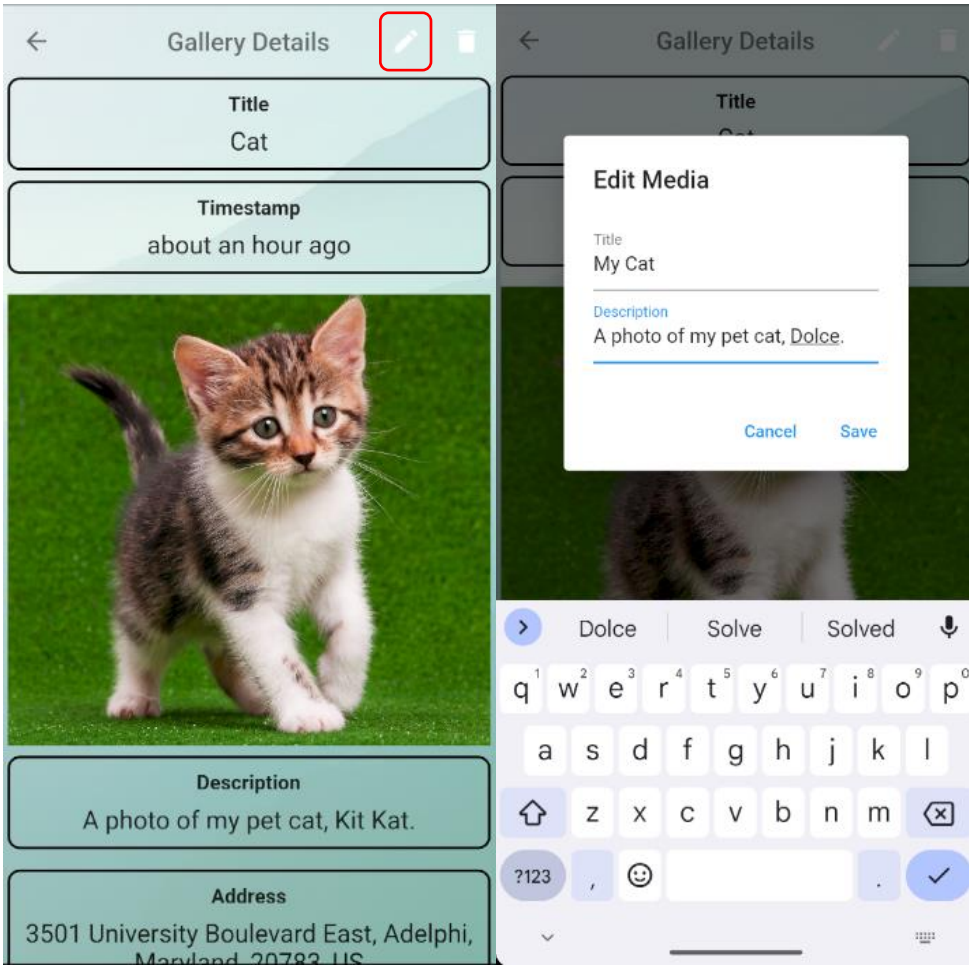

Figure 200: CogniOpen Gallery Screen Item Details Edit

To edit a media item, a user can click on the desired item and click on the Pencil Icon to edit its details. The only details that can be edited by the user are the title and the description.

6.2.5 Deleting a media object

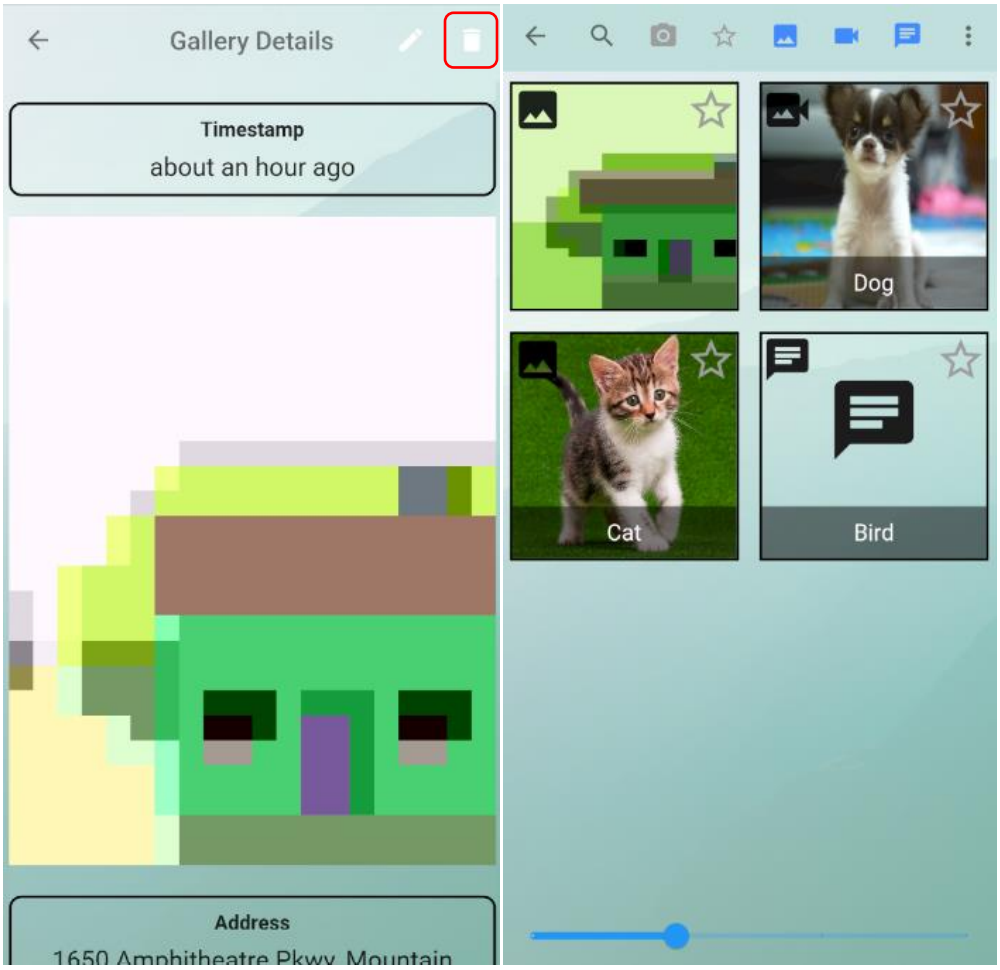

Figure 211: CogniOpen Gallery Screen Delete Item

To delete a media item from the gallery, a user can click on the desired item and click on the Trashcan Icon. Once the user clicks on the Icon, the application returns the user to the gallery screen and displays all the media items excluding the recently deleted item.

6.3 Video Screen

The moment the user opens the CogniOpen application, logs in, and allows camera permissions, the video is automatically recording in the background. To access the video screen to stop or start recording, the user needs to tap on the video icon located at the bottom of the screen from the main menu.

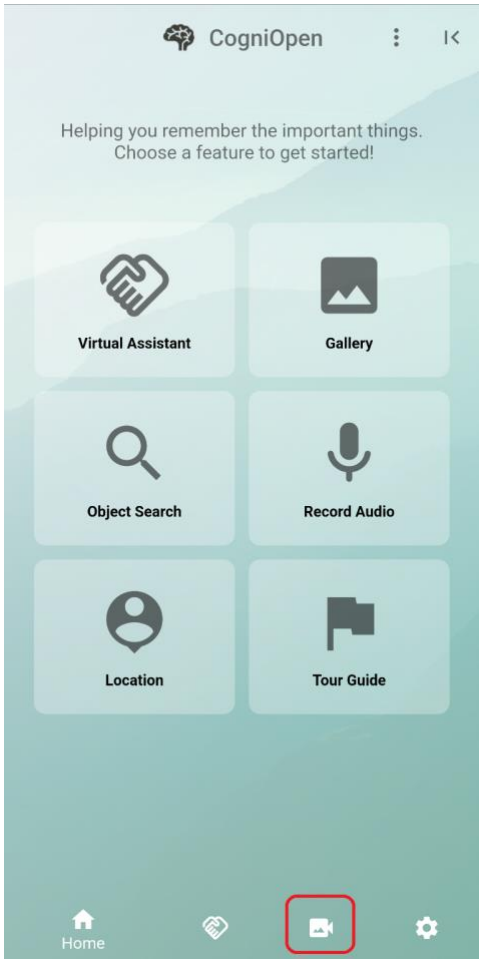

Figure 222: CogniOpen Video Screen

6.3.1 Video Controller Features

The Video screen of the application displays what's currently being viewed from the camera. Initially, the video is recorded automatically and displays a red border indicating it is currently recording. Tapping the pause icon will stop the recording, the red border will vanish, and it will be available to be viewed on the Gallery screen. The user may resume recording by tapping on the play icon.

Figure 233: CogniOpen Video Screen Controller

6.4 Object Search Screen (searching for recognized objects)

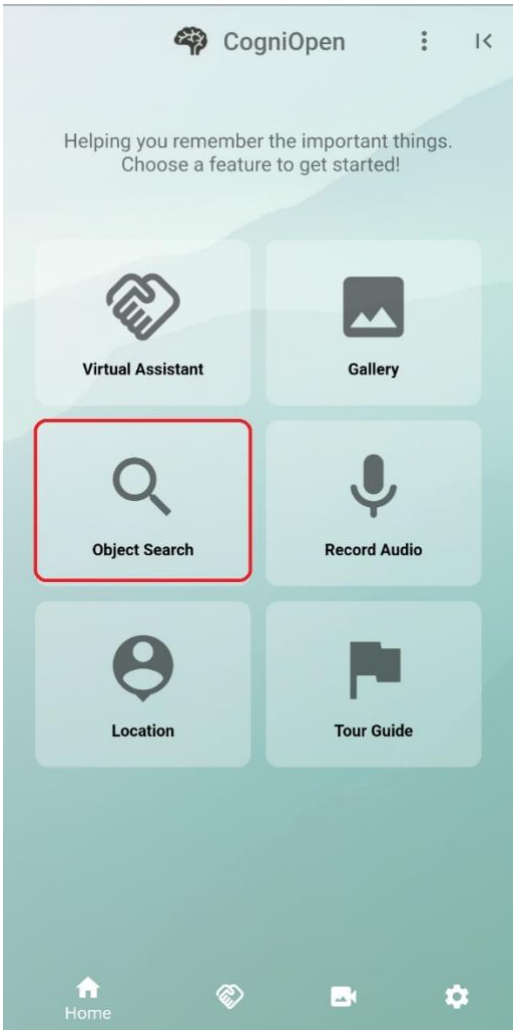

Figure 244: CogniOpen Object Search Screen

The “Object Search” screen is where all the most recent recognized objects from recorded videos are shown. When looking for an object, this screen is the place to go inside the application to better locate where the object was last seen by the application, along with the address of the object and time stamp.

6.4.1 Object Results Listings

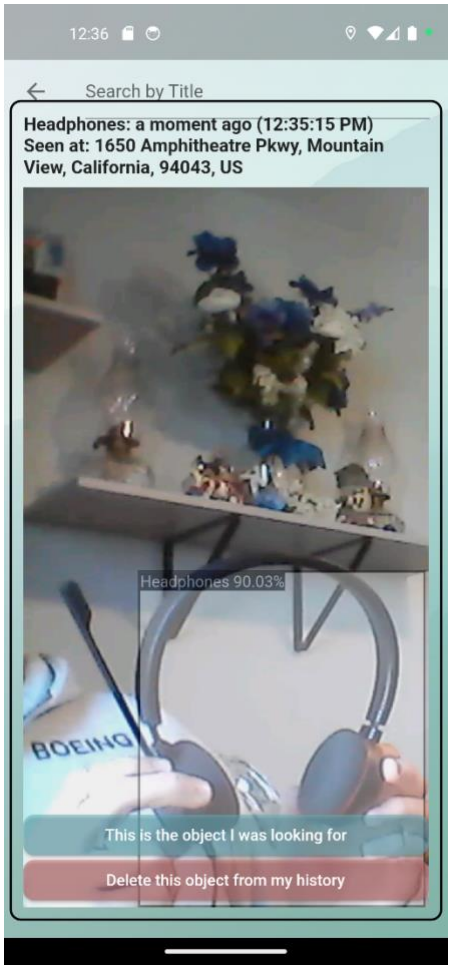

Figure 255: CogniOpen Object Results Listing

The newest objects detected from a recorded video will be displayed at the top of the list shown on the screen. Similar objects are grouped together and are viewed by swiping to the right on the object. Separate objects are not grouped together but are accessed by swiping down in the list. At the top of the screen is a search bar to query for an object with that specified text in the title (for instance a search for “ca” will show objects “cake” and “cape”, etc.).

6.4.2 Object Result

With the specified object returned, selecting one will allow the user to perform several operations. The first is to save the object which, in essence, returns the user back to the list of all objects and does not remove this object from the overall list of objects. The other option is to delete the object, which is used when this recognized object response is not the object for which the user was searching. The last option is to convert the detected object into a significant object. These significant objects can be used for training the application to better understand the user’s possessions and provide better, customized results for the user object search.

6.4.3 Clear Results

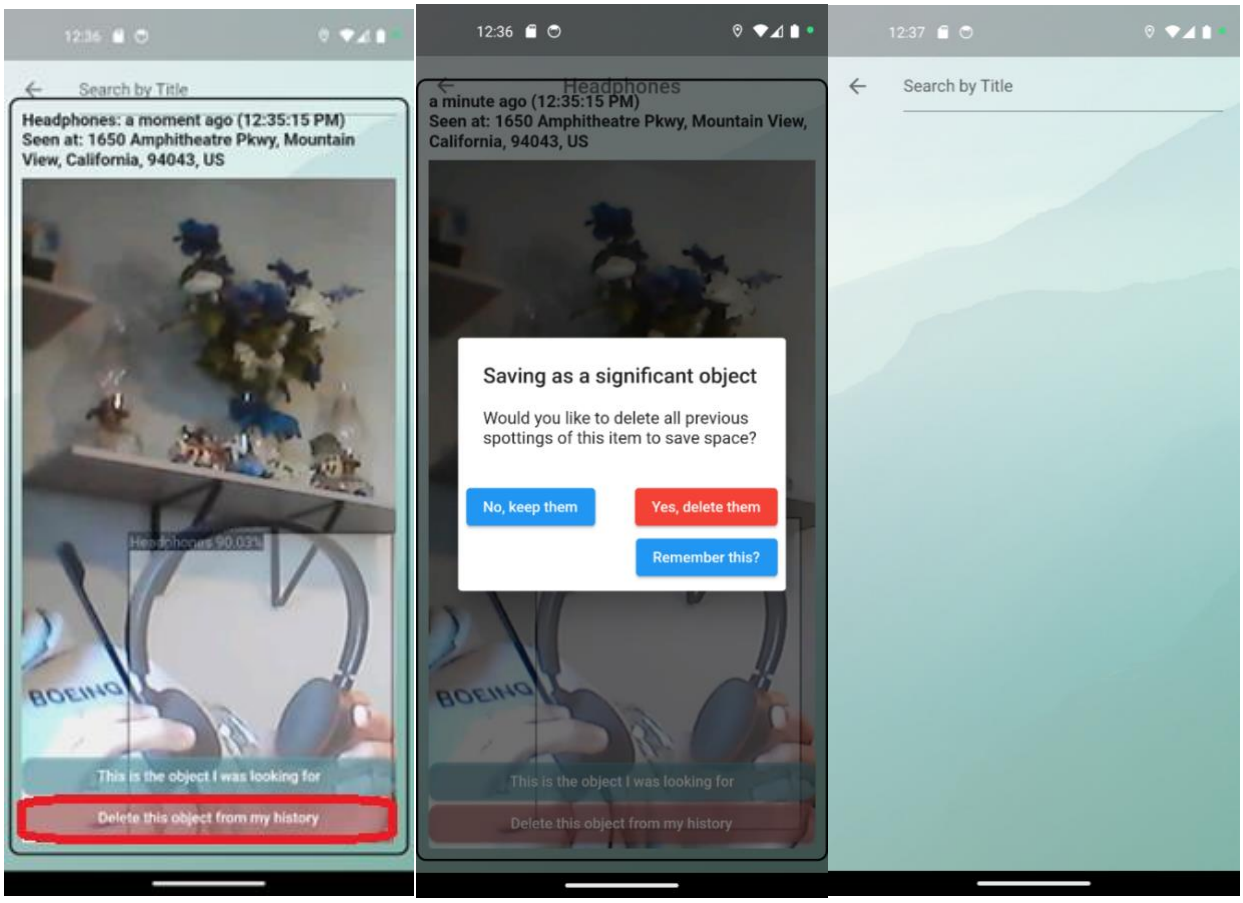

Figure 266: CogniOpen Object Deletion

There are two ways to remove an object from this screen. The first method is to click the “Delete this object from my history” button in the main screen. Alternatively, you may select one of the responses for that object, and then select the “Yes, delete them” button. This deletes the object from the list of overall object response results. As seen in the previous images, if this was the only result, it would clear the entire list. However, if there were other detected object results, the remaining objects would still be seen. Only the specific object result (matching the title) is deleted from the list.

6.4.4 Save Object to Aid in Future Searches

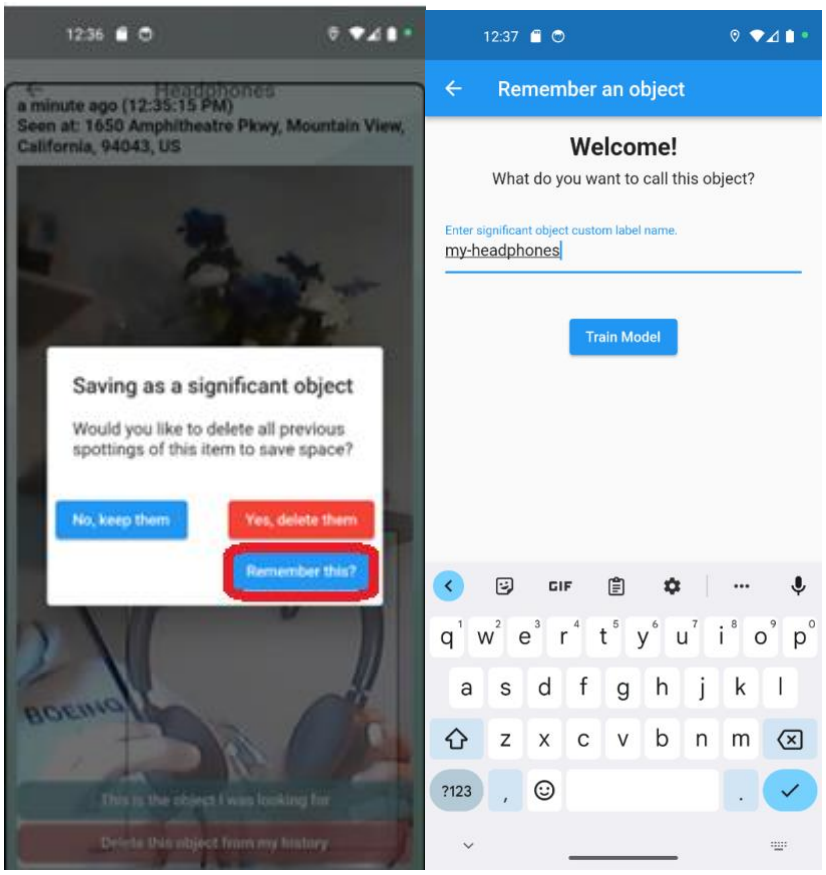

Figure 277: CogniOpen Object Converted to Significant Object

Alternatively, to use the object to help with future searches, select the “Remember this?” button. This button will take the user to a new screen where they are to enter a name for use in later recognizing the specific object as their object.

Developer’s Note: The current release of the application does not currently work past adding the model to Rekognition; future releases will plan to implement this functionality to enhance the user search capability.

	Name	Versions	Date created	Model status	Status message
○	cogni-open	1	2023-10-25		
○	my-headphones		2023-11-06	TRAINING_IN_PROGRESS	The model is being trained.

6.5 Location Screen

The location screen provides a history of the user's whereabouts as long as they have enabled their location permissions and location tracking is currently enabled on the phone.

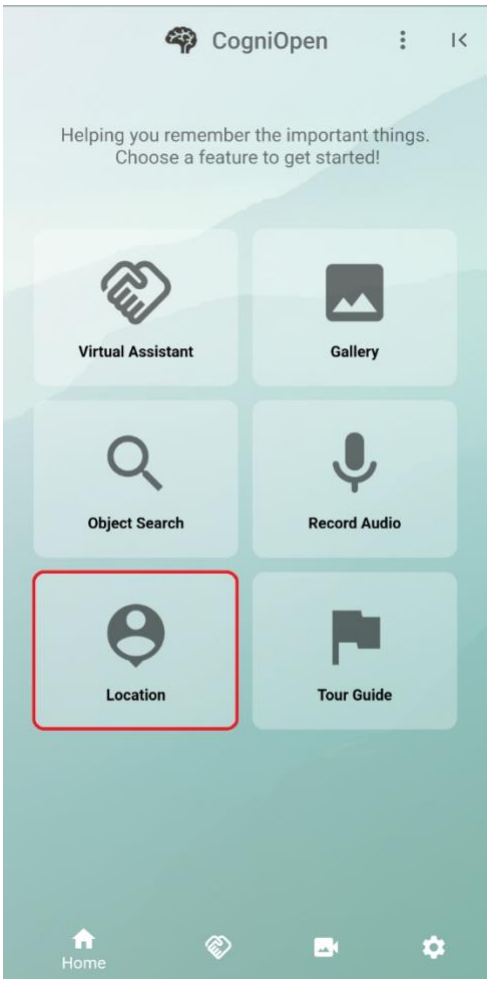

Figure 2828: CogniOpen Location Screen

6.5.1 Location History Screen

When launching the CogniOpen application for the first time, the user is required to grant location access permissions to the app, which then activates the logging of the user's location data. Upon accessing the location page within the app, users will be presented with a list that updates regularly to display all recorded location entries. Additionally, this list can be refreshed manually by pulling down on the list until a refresh icon appears and then disappears.

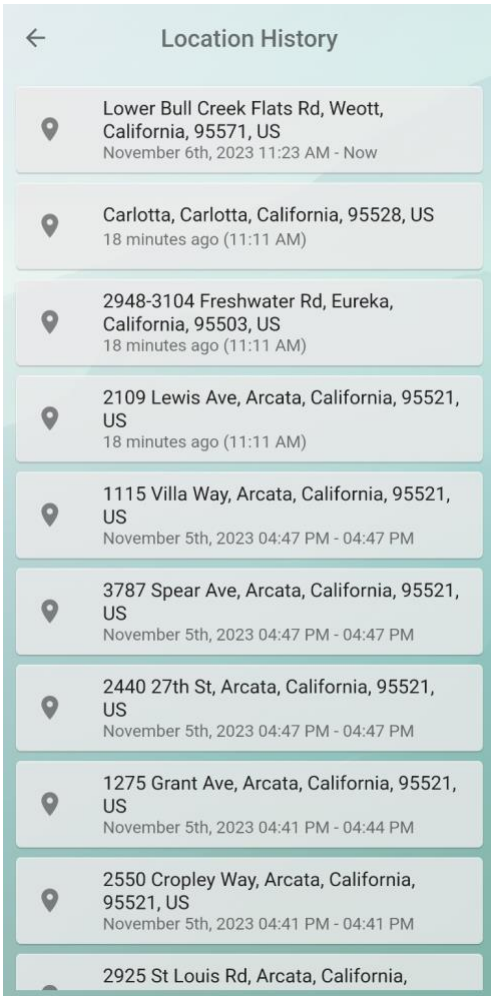

Figure 2929: CogniOpen Location History Screen

6.6 Significant Object Screen

CogniOpen application allows you to add significant objects to your collection, which can aid in the recall and association of crucial memories and information. You can either take a picture using your device's camera or choose an image from your gallery to upload.

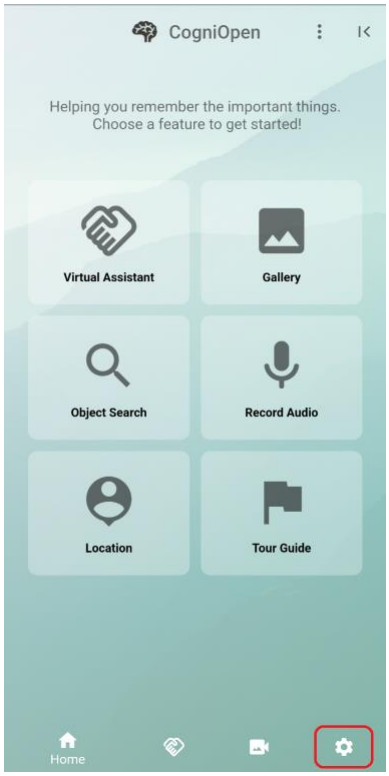

Figure 3030: CogniOpen Significant Object Screen

6.6.1 Accessing the Significant Objects screen

Figure 3031: CogniOpen Significant Object Screen

To start using the CogniOpen application's "Significant Objects" feature, follow these steps:

- Initiate the CogniOpen application.
- From the main screen, click "Settings" cogwheel icon.
- You will then be directed to "Significant Objects."

6.6.2 Uploading Significant Objects using Camera button

Figure 3032: CogniOpen Significant Object Screen

CogniOpen lets you create a collection of significant objects, which can aid in the retrieval and association of important memories and data. You can upload an image from your gallery or take a picture using your device's camera.

- The "Camera" icon is where you'll want to click on the "Significant Objects" section of the app.
- Grant the app permission to access your device's camera.
- To take a picture, aim the camera at the subject. Make sure it's well illuminated and in focus.
- When the shot is perfect, press the capture button.

6.6.3 Uploading Significant Objects using upload from Gallery button

You can upload Significant Objects images from your gallery.

- In the "Significant Objects" screen, hit the "Gallery" icon.
- Select a photo from your device's storage that represents the landmark you'd like to add.

7 Troubleshooting

Symptom	Suggested Solution
Device not picking up audio	Ensure device is within range, microphone permissions were accepted, and microphone is uncovered.
Location is not being saved	Ensure the device is connected to the internet and location services are enabled.
Device is not picking up video	Ensure camera permissions are accepted, and camera is uncovered.
Cannot see media in gallery screen	Ensure file permissions have been accepted.
Audio transcription is not working	Ensure the device is connected to the internet and you have a proper connection.
Application does not save media to device	Ensure file permissions have been accepted.
Virtual Assistant does not respond to queries	Ensure the device is connected to the internet and you have a proper connection.
Inaccurate or incomplete transcriptions	Ensure you are in a quiet environment with minimal background noise. Clear audio is essential for accurate transcriptions.
Unable to detect and recognize items in videos	Ensure that the objects or items you are trying to detect are adequately lit and visible within the video frame.

Table 3: Troubleshooting symptoms and solutions