

Artificial Intelligence (Ai) Guardian

User Manual

FYP

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1. Introduction

This User Manual outlines the fundamentals components of Ai Guardian, that will assist intended users by providing them with the required information and how to fully utilize the system. This document serves as a vital resource, with detailed explanation and step-by-step instructions for users, both novice and experienced, to help enhance their overall experience with the system.

1.1 Overview

The objective of Ai Guardian is to establish a mechanism that facilitates the process for individuals who are physically incapacitated or disabled to elicit aid through appropriate channels with ease. Communication under circumstances where one is unable to speak, stand or move around poses a significant risk and may lead to catastrophic outcomes. The development of a system, such as an Ai assistant akin to a physical nurse, that can aid in contacting the appropriate authorities in a courteous manner can prove invaluable. Depending on the nature of the individual's handicap. We offer assistance through a range of techniques including hand gestures, head gestures and eye movement.

The aim of Ai Guardian is to develop a comprehensive solution that caters to the needs of physically disabled individuals, as well as those who require monitoring, such as children, young adults, and the elderly. The project has a wide scope as it aims to assist individuals with various disabilities, including those with limited finger movement, obesity, and complete paralysis.

1.1.2 Conventions

Term	Definition
Ai	Artificial Intelligence
App	Application

Table 2.1: Conventions

2. Getting Started

2.1 Set-up Considerations

Ai Guardian is designed to work on smartphones that have Android 8.1 or higher. In order to mitigate difficulties while operating Ai Guardian, please ensure that your system fulfills the following requirements for a smooth experience:

- A stable internet connection
- Proper installation of the app on user device
- Pairing of app with cameras
- Alert and notifications turned on
- Access to location and contact list

2.2 User Access Considerations

This system is mainly developed for people with determination and those who need to be monitored (kids, young-adults, elderly people). The project's scope is extremely broad because it will be beneficial whether the person has a single disability or several, such as;

- Blind and has no arms
- Paralyzed but can blink their eyes
- Half paralysis but can move an arm
- Less fingers

2.3 Initial Setup

Upon installation, complete the initial setup process. This includes:

- Linking the cameras to the intended user's device
- Calibration of gesture recognition

3. System Organization & Navigation

This section will elucidate how different components of Ai Guardian have been organized and how the users will navigate from one component to another.

3.1 Main Menu

Upon launching the application, users are greeted by an intuitive and aesthetically pleasing main menu. The design is thoughtfully crafted to ensure a seamless and user-friendly experience, promoting easy navigation between various components. The menu features a clean and modern layout, with a harmonious combination of colors and fonts that enhance readability.

It showcases clearly labeled and visually distinct options, each representing a key component or feature of the application. These options include:

- ***Tutorials*** – include videos that help user get familiar with how the camera sensors work.
- ***Contact list*** – allow the user to add the contacts that they would like to send notification to when in need of help.
- ***Shake feature*** – a note that's clearly visible to the user telling them how to use the shake feature on the app.

3.2 Side Bar

Upon clicking the side bar, a drawer opens up, displaying two options:

- ***Purpose*** – shows the aim our app, that we intend to achieve.
- ***Creators*** – displays our names and registration numbers.

3.3 Assistance Techniques

The tutorial page in the app includes 3 different videos that the user can refer to in order to receive any assistance that they may require for the calibration of the cameras to detect user gestures.

4. Using Ai Guardian

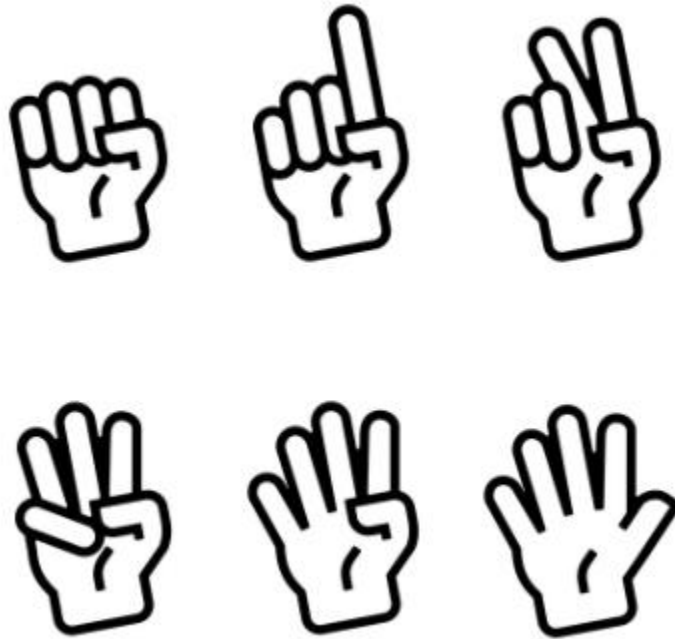
4.1 Activating the System

Once you have everything ready, the user is required to connect the cameras and devices to the local wifi network. When that is done, the user is then required to add the device ip address into the camera's configuration network to create a seamless link between the app and the camera.

Finally, the user is required to add contacts in to the patient's device for the app to be completely functional and send notification to the caregiver.

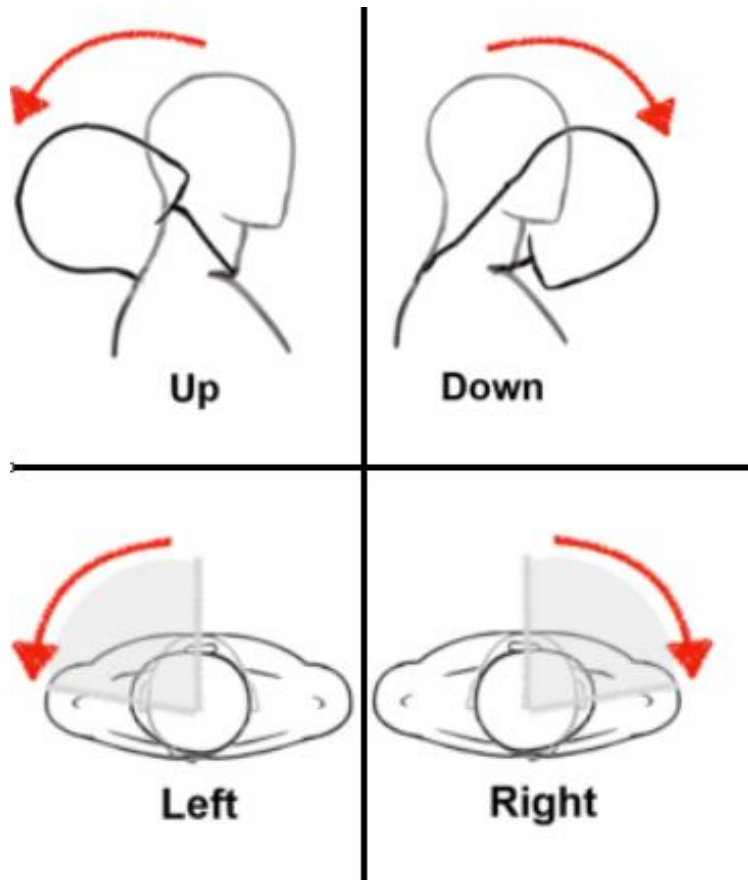
4.2 Communication Modes

4.2.1 Hand Gestures



The camera is able to recognize 6 hand gestures. Each gesture when recognized will send different notification message to the caretaker or the people on the patients contact list.

4.2.2 Head Movement



The camera is able to recognize 4 head movement and each movement when recognized will send different notification message to the caretaker or the people on the patients contact list.

4.2.3 Eye Movement

The camera is able to track eye blinks. The database has overall 6 blinks in store, meaning that each blink has different notification message. Which when recognized will send an alert to the care taker.

5. Troubleshooting

5.1 Common Issue

Users may occasionally face challenges with camera tracking for certain movements or gestures due to intentionally set parameters aimed at improving the overall user experience. A crucial parameter is the 5-meter safe distance, designed to optimize tracking accuracy by filtering out unintended or ambient movements. This ensures a focused and reliable tracking experience within the specified range. Users are encouraged to be mindful of this distance and adjust their position accordingly for optimal performance. Visual or audible cues may be provided to assist users in identifying the ideal distance for effective camera recognition.

5.2 Error Messages

In the event of an unexpected disruption in the wireless network connection on the patient's device, the system is designed to generate an error notification for the caretaker. The notification will convey a professionally-phrased message, such as: "Internet connectivity loss detected. Please attend to the patient's device promptly to ensure continued monitoring and connectivity." This proactive alert is intended to enable timely intervention by the caretaker, maintaining the seamless functionality of the monitoring system.

6. Safety and Privacy

At AI Guardians, ensuring the safety and privacy of our users is at the core of our mission. We understand the sensitive nature of health-related data, and thus, have implemented measures to guarantee a secure and confidential environment.

6.1 Data Security

AI Guardian employs a secure framework, utilizing your home network for seamless connectivity. This approach not only ensures the reliability of our services but also acts as a protective barrier against unauthorized access. Our commitment to your privacy includes the use of standard security protocols, creating a safe space for health monitoring without compromising confidentiality.

7. Support

In case of any other issue, please contact the following pupils:

Contact	Organization	Email
M. A.	SZABIST, Dubai	----
K. A.	SZABIST, Dubai	----
A. I.	SZABIST, Dubai	----

8. Conclusion

Thank you for choosing Ai Guardian. We hope this system enhances your safety and provides valuable assistance in times of need. If you have any feedback or suggestions, we welcome them to continually improve our services.