

# HOLD MY HAND APPLICATION FOR DISABILITIES

Rania Aboalela, Shmokh Sebaa, Atheer Almohamadi,  
Rahaf Almohammadi and Ghozlan alzebali

Department of Information System, King Abdulaziz University, Rabigh, Saudi Arabia

## **ABSTRACT**

*In this project, we aim to take advantage of today's technology to offer a helping hand to people with special needs. Therefore, this work suggests a control system as an Android application in addition to a website for people with special needs. Many people with special needs have problems asking for or interpreting and recognizing their needs. Hence the idea of the application is designed to work on smart devices to help them communicate and identify their understanding way. Through the keyboard or speech translation. Artificial intelligence techniques have used to enrich the work and add useful and important features such as chatbot technology. In short, this project is to make life as easy as possible for people with physical disabilities and make them go about their lives without relying on others or waiting for help.*

## **KEYWORDS**

*Special needs people, Android application, Online services, Artificial intelligence, Disabilities.*

## **1. INTRODUCTION**

Technology is a radical turning point in life, as it has changed human lifestyle which became highly dependent on it and in all aspects of life. Technological development has contributed to many positive points that were initially limited to providing information and strengthening social ties through social networking sites. This research discusses the development of an application that uses artificial intelligence and advanced technologies in order to provide smart services for disabled people and connect them to network of different involved stakeholder. It includes providing various services to people, which saves them effort, money, and time, Moreover, it helps in many research tasks and access to knowledge in the shortest possible time [1].

human lifeworld is drastically influenced by these developments. The way information technology is intertwined in human daily life raises new issues concerning the possibility of understanding these new configurations [2], As we know, the number of mobile apps is rising. This can be seen in the Android Play Store where more than 3.5 million different apps are available. However, most apps have some problems with accessibility [3].

The services that these applications provide are varied and branched out to include various aspects. The most important thing in all of this is that the use and benefit of this technology are no longer restricted to a certain group (healthy people). Concepts and tools have evolved to make the category of people with special needs one of the most important segments that use technology in facilitating daily tasks for them. And this project will contain a chatbot, a chatbot is also a conversational agent that interacts with users using language, this interaction is triggered using visual and text commands [4] to answer user's questions and to respond to medical consultations with users with special needs.

This is what the project will focus on, which is based on creating an application of different services for people with special needs. This application will have a great positive impact, as it will make these people feel strong and independent and do not wait for help to complete their tasks, as it will give them the ability to determine their requirements and request the services they want easily and conveniently for them and will provide them with a space to get to know people who have the same disabilities. The structure of this paper is composed as the following: First the introduction. Second the aims and objectives, The third section for the methodology. The fourth for the significance of this work. Fifth, sixth. Seventh and eighth are respectively for the background problem, the result, the benefit of the proposed application and the conclusion

## **2. AIMS AND OBJECTIVES**

The main aim is to make the people with special needs integrate and communicate with their community, each of them according to the way that suits their disability and makes them able to have the service that helps them.

The objective of this system is to develop an android application and a website to provide services to people with special needs. The services include social, medical communication, and other services.

There are sub-goals as follows:

1. Build an Android application with a website, they are easy to use to reach the largest segment of users.
2. Activate the live location feature so that the user can share his location with others.
3. Activate the fingerprint feature to verify the identity of the user and raise the level of security.
4. Using the voice command feature to facilitate the request for services by some users with special needs.
5. Assisting people with special needs in finding the required and useful services for them, especially university students with special needs

## **3. METHODOLOGY**

The methodology used to build this project is the waterfall SDLC model. Later, we'll have a section that explains why the waterfall SDLC model has been chosen and its advantages and disadvantages.

The waterfall model uses a sequential way to program evolution, which is to describe, explain, and systematically evaluate all the aspects. We decided within our project to use this model because it is considered an easy and simple methodology due to the ability to provide a full understanding of all requirements and deliveries.

Knowing that each stage of the waterfall has specific outputs will facilitate the process of analyzing the validity of the system output and this will verification is done at every stage of the waterfall model, ensuring early detection of errors, and ending all misunderstandings that we may encounter during the development stage that project requirements are completed early.

Waterfall model features:

- Easy to understand and use.

- The stages are carefully defined.
- Easy to manage and arrange tasks.
- This model is suitable for us as we are students in the phase of creating a graduation project.

### 3.1. UML Method

The Unified Modeling Language (UML) is a graphical language that gives a standard way to write a software system’s blueprint. It helps to visualize, specify, construct, and document the artifacts of an object-oriented system. It is used to depict the structures and relationships in a complex system. The UML is an open standard; it is not a proprietary Rational language. As such, the UML may be used freely by anyone, anywhere [2].

The use of UML leads to the correct and successful implementation of the development of any software system, and it helps the project team express ideas, communicate with each other, and verify the program model before the implementation phase.

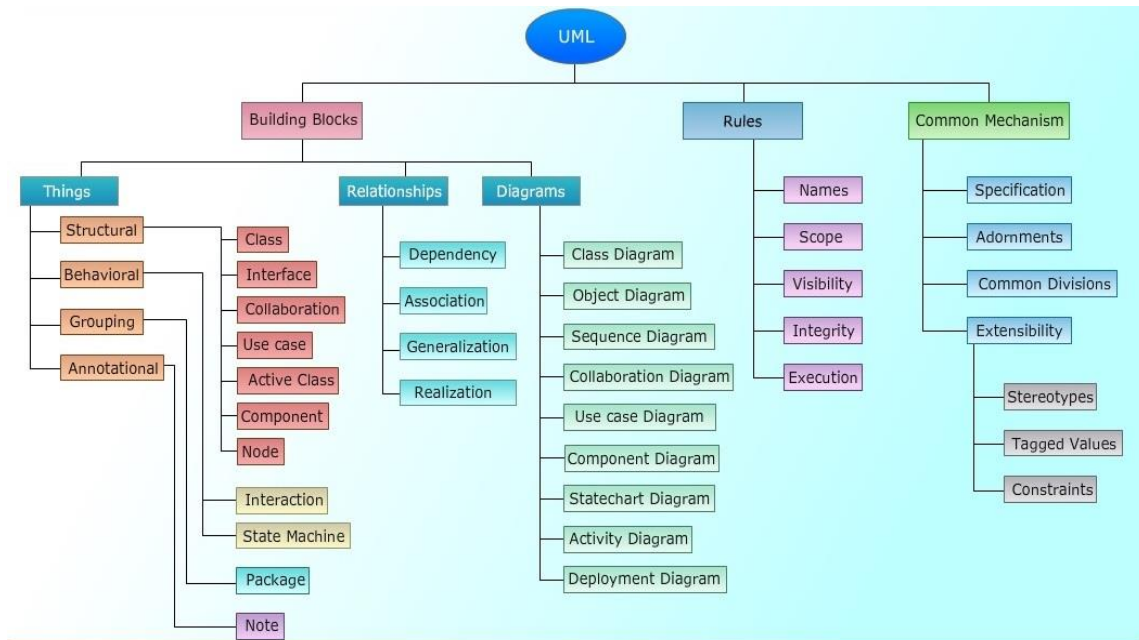


Figure 3 1. Unified Modeling Language

### 3.2. Methodology Prototype

The prototyping methodology is a method used for software development that allows system developers in the process to build parts of the system’s solutions, which aim to finish one phase before moving on to the next one.

Prototype methods will be applied while developing our system, to meet the requirements of the system, before moving on to the next stages.

### 3.3. Project Planning Phase

At this point, work is done to define the project problem and the goal of the project, which helps to better understand the system and its requirements. Project requirements will be collected by taking an online questionnaire and the questionnaire will be distributed.

Through the first stage, which includes research, we found a great demand for dealing with the system that we are seeking to develop, and we found that many users of people with special needs suffer from getting the services they want.

### **3.4. Prototype Design Phase**

Software prototyping refers to the creation of system prototypes that serve to illustrate the application's functionality. when you create a model designed to solve consumers' problems or validate ideas that you can test in the next stage of the process. It allows the design team to problem-solve their ideas.

Prototyping will help in testing and validating user requirements by obtaining their feedback after running the system prototype [3].

### **3.5. Coding and Prototype Development Phase**

The project plan will be applied, and the work of our system will be executed. Control and communication between our project team will be maintained, as needed during implementation to achieve the Project's goals during this phase.

### **3.6. Testing Phase**

Our primary goal will be to test the final product and make sure all the functionalities working correctly before deploying the system. If every unit and functionality passed the test, then the final product will be created for users to start releasing the product.

### **3.7. Updating and Maintenance Phase**

The repair and updating phase are continuous, and it is considered the most extended phase of the system development stage, as work continues the system. It is the last stage to improve the system in use if there were any problems or errors.

## **4. SIGNIFICANCE OF PROPOSED WORK**

The idea of this project will help in providing most of the possible services for people with special needs, such as university students with special needs. It will also create a collaborative environment between the active individuals who want to provide their useful services and the people who benefit from these services and assign them to people with special needs, to reach the goal, which revolves around the integration of these people with their community. It makes them feel belonging, inferior, and independent, especially about their daily and permanent needs.

## **5. BACKGROUND PROBLEMS**

Through the search for applications that may help in the facilitation of the life of all people, especially in the Kingdom of Saudi Arabia, we found that there is a lack of an integrated application that offers complete services to people with special needs.

From this point, this project started working on an application that provides its services to people with special needs and allows them to integrate and mingle in their society on a large scale. It is also distinguished by not providing its services to one category of people with special needs, but

rather it is available to everyone and in easy ways, whether it is for the blind through voice commands or for the deaf and others.

This application also allows people who wish to provide their services to people with disabilities by logging into the application and then filling out a form containing the services they wish to secure, whether they are services such as delivery or ordering food, or if they are medical such as booking appointments or social such as chat rooms that allow people with special needs to get to know people like them and participate their experiences with each other, which increases their self-confidence and increase their experience in dealing with the outside community.

To determine the requirements of the system, a questionnaire has been made containing the essential related questions, so the questions are specialist and specify the need of every one of the users, 130 people participated in the survey and the results of the survey were as the following table:

Table 1. Result of the questionnaire

Question	Answer	Result
1. What is your Gender?	• Female	85.4%
	• Male	14.6%
2. What is your age group?	• Under 18	14.6%
	• 18-30	64.6%
	• Over 30	20.8%
3. What kind of users are you?	• Healthy	99.2%
	• With special needs	0.8%
4. What do you do now?	• Nothing	21.5%
	• Student	61.5%
	• Employed	16.9%
5. If you were able to help, would you give it for free or for interest?	• Free	87.7%
	• At a nominal price	12.3%
6. Do you know someone with special needs?	• Yes	63.1%
7. Do you prefer to order services online?	• Yes	48.5%
	• No	3.8%
	• Not always	47.7%

Table 1. Continue (Result of the questionnaire)

Question	Answer	Result
8. Do you prefer to use voice commands?	• Yes	22.3%
	• No	28.5%
	• Sometimes	49.2%
9. What kind of services do you want to get?	• Delivery services	17.7%
	• Shopping	32.3%
	• Booking appointments	20%
	• Medical consulting	24.6%
	• Chats	5.4%
10. Will this application be useful and break down barriers in your opinion?	• Yes	56.9%
	• I hope so	42.3%
	• No	0.8%
11. How do you rate our app?	• 5: Very useful	66.9%
	• 4	20%
	• 3	12.3%
	• 2	0%
	• 1: Useless	0.8%

## 6. RESULT FOR SOFTWARE REQUIREMENTS

In this section several functional and non-functional requirements are described, which work to define a complete detail of the tasks that all users within the system can perform, determine the sequence of those services and work to appear them within several different charts to determine the sequence of implementation processes and the structure in which those tasks will be formed.

### 6.1. Functional Requirements

Functional requirements are to describe the interaction between the system and the environment and what the system should be able to do.

It is the essential details and tasks that the system will implement can be listed in the following points [5]. The project's system includes several different users, who are separated from each other in some of the tasks that the system can perform, and therefore, in the beginning, we will define and characterize the types of users.

#### 6.1.1. Disabled user:

Is an entity within the system, and is considered fundamentally within our system, as it can do the following

1. Will allow the user with special needs to register to the system
2. Will allow the user with special needs to enter their personal information, which includes (name, gender, type of disability, email, fingerprint)
3. Will allow the user with special needs to log in to the system
4. Will allow the user with special needs to ask for the services he/she wishes to obtain after selecting services by browsing the application or website.
5. Will allow the user with special needs to obtain medical advice from specialists
6. Will allow the user with special needs to start chatting with other users who have the same disability

7. allow the user with special needs to activate live location and share it with others
8. Will allow a user with a disability to logout

### **6.1.2. Benefactor:**

#### **An entity in the system that does the following**

1. Will allow benefactors to register the system
2. Will allow benefactors to enter their personal information
3. Will allow benefactors to log into the system
4. Will allow benefactors to record the services they can provide
5. Will allow benefactors to logout

### **6.1.3. Administrator:**

The administrator is the person who will manage the work on the application and control all the operations that will occur through it. He can do the following:

1. Will allow the administrator to log in
2. Will allow the administrator to manage the database by managing all system user accounts, which will include (adding a user, adding a benefactor, deleting a user, deleting a benefactor), and managing centers that provide services (add a center, delete a center).
3. Will allow the administrator to approve a user account which will include approving people with special needs and approving benefactors.
4. Will allow the administrator to logout

## **6.2. Non-Functional Requirement**

- **Reliability:** The system guarantees the reliability of the data for its users, based on the types of these users, as the system guarantees the accuracy of dealing with the application and the accuracy of the operations that take place within the app.
- **Security:** ensure that the software is protected from unauthorized access to the system and its stored data. It considers different levels of authorization and authentication across different users' roles.
- **Performance:** a quality attribute that describes the responsiveness of the system to various user interactions with it and ensures the ease of utilization to the end-users and will ensure faster response time to them.
- **Continuity:** The system guarantees to users that the app and the system, in general, are working continuously 24/24, and users can interact with the system at the time they want.

## **6.3. Interface Requirement**

The user interface design defines how the users will interact with the system and the kind of inputs and outputs that the system allows producing. Sit system interfaces are typically designed as part of a systems integration effort [6].

The interface must be easy for the user to understand and designed in clear and simple colors. So, the interaction between the user and the system will become more efficient, the most important thing is to keep the interface simple by using clear language and avoiding unnecessary elements to make it easy for the user to understand [7]

## 7. BENEFITS OF THE PROPOSED APPLICATION

It will help in making the people with special needs integrate and communicate with their community, each of them according to the way that suits his disability, and makes them able to have the service that helps them by providing the following features:

1. Both normal people and people with special needs can use it.
2. It provides services for people with special needs with all disabilities not only one.
3. It supports voice commands.
4. It provides most services like social and medical services.
5. It supports both Arabic and English.

Table 2 explains the important differences and similarities in the services and provided the features of this proposed system and the other related apps

Table 2. Comparison with the similar work

Features	Related Work				The presented Application
	Careem Application [8]	Choice works Application [9]	Sehhaty Application [10]	Be_my_eyes Application [11]	Hold my hand Application
Healthy people and people with special needs can use it	X	√	√	X	√
Provides services for people with special needs with all disabilities	X	X	√	X	√
Supports voice commands	X	X	X	√	√
Provides social and medical services	X	X	X	√	√
Having chat Room	X	X	X	X	√

## 8. CONCLUSIONS

People with special needs are part of the most important groups in our society, and it is necessary to highlight their needs and facilitate their access to what they want independently without needing the help of others. This idea was the starting point of our project, and our main motive is to make people with special needs request the services they need in a simple, clear, and without complications. People with special needs, after registering in the application, can request advice, book an appointment, order food, or otherwise, and if the person is blind, he can request services by voice commands. The benefactors can also offer help and provide whatever services they can, and the admin manages the application by deleting or adding accounts and centers. This application will make a difference in the lives of people with special needs.

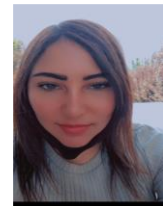


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## AUTHORS

Rania Aboalela, assistant Professor, information system department, King Abdulaziz University- Rabigh, Saudi Arabia



Shmokh Sebaa, Atheer Almohamadi, Rahaf Almohammadi and Ghozlan alzebali  
Graduated students from the Department of Information System at King Abdulaziz University, Rabigh, Saudi Arabia