

Functional Requirements

1. Normal User Registration

This is the page for users to register as our app's users, which requests users to validate their phone numbers, set password and fill in necessary detailed information.

Priority: HIGH

1.1 When users first open the App, the system shall show the register page.

1.1.1 The system must provide the statement of information disclosure.

1.1.2 Users must enter their phone number.

1.1.2.1 The phone number must be text of 8 digits.

1.1.3 System must check the validity of their phone number.

1.1.3.1 When users click the 'Send Validation Code' button, the system must be able to send a validation code to the phone with the phone number.

1.1.3.1.1 Users shall be able to click this button every 60 seconds.

1.1.3.1.2 The validation code must be text of 6 digits.

1.1.3.2 When users enter the validation code, the system must check the correctness.

1.1.3.2.1 With the wrong validation code, the system must ask users to retry. (Back to 1.1.3)

1.1.3.2.2 With correct validation code, the input textbox for validation code must be replaced by a green tick icon.

1.1.4 Users must enter their account password.

1.1.4.1 The password must be ASCII text of at least 8 characters and at most 512 characters.

1.1.5 Users must enter their account password again to confirm.

1.1.5.1 The confirmed password must be ASCII text of at least 8 characters and at most 512 characters.

1.1.6 When users click the register button, the system must check the validity of the phone number and password.

1.1.6.1 If the phone number is not an 8-length number text, the system must pop up a red color text to remind users to enter again.

- 1.1.6.2 If the phone number has not been validated, the system must pop up a red color text to remind users to check the validation.
- 1.1.6.3 If the password is not a text with at least 8 characters, the system must pop up a red color text to remind users to enter again.
- 1.1.6.4 If the confirmed password is not the same as the password, the system must pop up a red color text to remind users to enter again.
- 1.1.6.5 If all requirements are fulfilled, the system must jump to the detail information page.
 - 1.1.6.5.1 The system must send the phone number and hashed password to the server.
 - 1.1.6.5.2 The system must store the phone number and hashed password in the phone.
- 1.1.7 When users click the sign in button, the system must switch to the sign in page.
- 1.2 Users must enter detailed information in the detail information page.
 - 1.2.1 Users must enter their name.
 - 1.2.1.1 Name must be text of at least 1 character and less than 512 characters.
 - 1.2.2 Users must enter their NRIC/FIN number.
 - 1.2.2.1 NRIC/FIN number must be text of 1 character + 7 numbers + 1 character.
 - 1.2.3 Users must enter their home address.
 - 1.2.3.1 Home address must be text of at least 1 character and less than 512 characters.
 - 1.2.4 Users must enter their work address.
 - 1.2.4.1 Work address must be text of at least 1 character and less than 512 characters.
 - 1.2.5 Users must enter their age.
 - 1.2.5.1 Age must be text of at least 1 number and less than 3 numbers.
 - 1.2.6 Users must enter their medical conditions.
 - 1.2.6.1 Medical conditions must be text of at least 1 character and less than 1024 characters.
 - 1.2.7 Users must upload their photo.

1.2.7.1 Photo must be in jpg or png format of less than 5 Mb.

1.2.8 Users can enter their emergency name.

1.2.8.1 Emergency name must be text of less than 512 characters.

1.2.9 Users can enter their emergency contact number.

1.2.9.1 Emergency contact number must be text of 8 numbers

1.2.10 When users click the next page button, the system must check information on this page.

1.2.10.1 If the name is not a text of at least 1 character and less than 512 characters, the system must pop up a red color text to remind users to enter again.

1.2.10.2 If the NRIC/FIN is not a text of 1 character + 7 numbers + 1 character, the system must pop up a red color text to remind users to enter again.

1.2.10.3 If the home address is not a text of at least 1 character and less than 512 characters, the system must pop up a red color text to remind users to enter again.

1.2.10.4 If the work address is not a text of at least 1 character and less than 512 characters, the system must pop up a red color text to remind users to enter again.

1.2.10.5 If the age is not a text of at least 1 number and less than 3 numbers, the system must pop up a red color text to remind users to enter again.

1.2.10.6 If the medical condition is not a text of at least 1 character and less than 1024 characters, the system must pop up a red color text to remind users to enter again.

1.2.10.7 If the photo is not in jpg or png format of less than 5 Mb, the system must pop up a red color text to remind users to upload again.

1.2.10.8 If the emergency name is not a text of less than 512 characters, the system must pop up a red color text to remind users to enter again.

1.2.10.9 If the emergency contact number is not a text of 8 numbers, the system must pop up a red color text to remind users to enter again.

1.2.10.10 If all information is in correct formats, the system must switch to the additional information page.

1.2.10.10.1 The system must send all information on this page to the server to store.

1.3 If users already have accounts, they can enter their phone number and password in the

sign in page.

1.3.1 Users must enter the phone number.

2.1.1 The phone number must be text of 8 digits.

1.3.2 Users must enter the password.

2.2.1 The password must be ASCII text of at least 8 characters and at most 512 characters.

1.3.3 When users click the sign in button, the system must check the phone number and password.

1.3.3.1 If the phone number is not an 8-length number text, the system must pop up a red color text to remind users to enter again.

1.3.3.2 If the phone number is not stored in the server, the system must pop up a red color text to remind users to register.

1.3.3.3 If the phone number does not match the password according to the data in the server, the system must pop up a red color text to remind users to enter again.

1.3.3.4 If the phone number matches the password according to the data in the server, the system must jump to the patient page.

1.3.3.4.1 The system must store the phone number and hashed password in the phone.

1.3.4 When users click the register button, the system must switch to the register button.

1.4 When users open the app with phone number and hashed password stored in the phone, the system must automatically sign in with the stored credentials.

1.5 The system must ask users to enable the location service.

1.6 The system must ask users to enable access to the contact book.

2 Save Me Page

This is the main page in our app, which allows users to ask rescuers for help.

Priority: HIGH

- 2.1 When users reopen the app after registering or signing in, the system must show the save me page.
- 2.2 When users click the save me button, the system must collect users' current location information.
 - 2.2.1 The save me button must be in the center of the screen, with an impressive red color.
 - 2.2.2 The system must first try to locate the phone by GPS.
 - 2.2.3 The system must try to locate the phone by network if GPS is not working.
 - 2.2.4 The system must try to get the final location information from applications if GPS and network are both not working.
 - 2.2.5 The system must replace the location information by users' home address if the location phone got is absolute with an error of 50m compared to the home address.
 - 2.2.6 The system must replace the location information by users' work address if the location phone got is absolute with an error of 50m compared to the work address.
- 2.3 When location information has been obtained, the system must send the phone number with location information to the server after 10 seconds.
 - 2.3.1 The system must show a red color text to inform users that the information has been sent and rescuers are coming.
 - 2.3.2 The save me button must show as it has been pressed.
 - 2.3.3 When users hold the save me button for 3 seconds, the system must send a request to the server to cancel the request.
 - 2.3.3.1 The server must stop sending requests to the phone numbers in the rescuers' database.
 - 2.3.3.2 The server must send a request to all phone numbers it sent to require cancellation.
 - 2.3.3.3 When the time after users click the button reaches 30 minutes, the system must send a request to the server to cancel the request.
 - 2.3.3.4 The save me button must show as it has not been pressed after users click the cancel requesting button or after 30 minutes.
 - 2.3.4 The system must show a detailed information dialog for users to input additional information like floor level.

- 2.3.4.1 The input must be text of more than 1 character.
 - 2.3.4.2 When users click the send button, the system must send the input text to the server.
 - 2.3.4.2.1 When the server receives additional information, it must send it to all phone numbers it sent users' information and location to.
- 2.4 When location information has been obtained, the system must send a request to the A & D department.
- 2.5 When the server receives the phone number, it must query the users' profile data according to the phone number.
 - 2.5.1 The server must find users' photos.
 - 2.5.2 The server must find users' age.
 - 2.5.3 The server must find users' medical conditions.
- 2.6 When the server finds users' photo, age, and medical conditions, it must send a request to all phones with phone numbers in the rescuer database to get their current location.
 - 2.6.1 The system must first try to locate the phone by GPS.
 - 2.6.2 The system must try to locate the phone by network if GPS is not working.
 - 2.6.3 The system must try to get the final location information from applications if GPS and network are both not working.
 - 2.6.4 When location information has been gotten, the system must return the information to the server.
- 2.7 Each time the server gets the returned location information, it must compare this location to the users' location.
 - 2.7.1 If the distance between these two locations is less than 10Km, the server must send users' photo, phone number, age, conditions and location to this phone number.
 - 2.7.1.1 The server shall call Google Distance API to get the distance information.
 - 2.7.1.2 If the server has received detailed information, it must also send it to this phone number.
- 2.8 System must reject the request once the user has requested more than 5 times per month.

3 Menu Page

This is a menu Page where function of viewing, changing of profile, changing language and helps and feedback allocate

Priority: HIGH

- 3.1 A Profile page button must be shown in Menu page.
 - 3.1.1 When a user clicks on the profile page button, the profile page shall be shown with all the personal information filled.
 - 3.1.1.1 NRIC/FIN must be censored (e.g., GXXXXXX5).
 - 3.1.2 Every particular (Name, Mobile Number, NRIC, Home Address, Work Address, Age, medical Conditions, Emergency Name, Emergency Number) must have an edit button behind it except phone number and NRIC
 - 3.1.2.1 When a user clicks the edit button, user must be required to fill in the password [Requirements same as 1.3]
 - 3.1.2.2 After the an editable fill of respective particular must shown and the edit button must be changed to confirm button.
 - 3.1.2.3 When user confirms the edition, the edition shall overwrite the original information
- 3.2 A change language Button shall be shown
 - 3.2.1 When a user clicks on it, a pop out containing a drop down of a few languages (English, Mandarin, Malay, Tamil) must be shown.
 - 3.2.2 After the user clicks the language the user chose; all the apps must be changed to the respective language.
- 3.3 Under the Profile Page, At the bottom, there is a Help & Feedback section
 - 3.3.1 Under the section, there is a help button, where this help button must make a link to a web page containing information about this app.
 - 3.3.1.1 The information contains the policies of this app, how to use this app, Tips and shortcut, FAQ,
 - 3.3.1.2 The system shall also provide methods for different phone users to know how to available software shortcut in opening the app.
 - 3.3.2 There is a report Vulnerability button, where user must be direct to another web page containing a field where user can submit their feedback about the app

4 Volunteers Registration Page

As CPR requires professional training, a user needs to provide a CPR certificate, volunteer statement, and more relevant details to register as a volunteering rescuer. The registration request and information must be sent to professional institutes for qualification. Users must be authorized to access the rescuer function after qualification.

Priority: HIGH

- 4.1 For normal user who is not a verified volunteer, the rescue page must be shown as a Sign up as a volunteer Page instead of rescue page
- 4.2 For normal user who is not a verified volunteer, user click on the “rescuer” button to enter the registration page:
 - 4.2.1. Users must provide an authorized CPR certificate and relevant information to register as a verified volunteer.
 - 4.2.2. Users must upload the electronic certificate before continuing.
 - 4.2.2.1. System restricts the size (10MB) and format of the uploaded file (pdf or png).
 - 4.2.2.2. System provides a template of the certificate for uploading.
 - 4.2.3. Users may provide information about their usual workplace, home location, daily travel mode etc.
 - 4.2.4. Users must confirm the volunteer willingness and awareness of the responsibility
 - 4.2.4.1. System must provide the statement of information disclosure.
 - 4.2.5. Users must click the “submission” button to submit the appeal. System must show the “Pending for approval” interface and show the date of appeal submission before the request is processed, when the user accesses the sign-up portal.
 - 4.2.6. System must send out the appeal result to the customer through Messages or email after the review by the maintainers.
 - 4.2.6.1. Scenario 1: registration successful. The user is granted access to the rescuer interface under sign up as rescuer tab.
 - 4.2.6.2. Scenario 2: registration rejected. System must return the feedback from the maintainers, and the “sign up as rescuer” function is reopened for another submission.
- 4.3. For a normal user who is a verified volunteer, please refer to 5. rescue page.

5 Rescue Page

When the system decides a volunteer meets criteria above and is a candidate rescuer, the volunteer side must receive a brief notification; clicking the notification must enter the app and the server must display relevant information for the rescue. The volunteer can decide whether to accept the request or not. A volunteer responding to the request must be later referred to as a *rescuer*.

Priority: HIGH

- 5.1 The page shall be hidden from the user when there is no request active.
- 5.2 Users shall be notified (via pop notification, vibration, or alarm) when the server determines that they qualify for candidate rescuers.
- 5.3 Rescue Page shall be opened when the user clicks the aforementioned notification. The page shall contain information below:
 - I. Possible location of incident
 - II. Time elapsed since the request being emitted
 - III. Likely condition of patient
 - IV. Number of rescuers approaching
 - V. Estimated time needed to arrive at the location of incidentSpecifically, statistics on the number of volunteers responding to requests shall be updated whenever someone responds to the request.
- 5.4 Shall the volunteer decides to respond to the request,
 - 5.4.1 App shall provide built-in map guidance to aid volunteer in finding patient as soon as possible.
 - 5.4.2 AED equipment location and Clinic location shall be shown in the map.
 - 5.4.3 Moreover, additional information shall be displayed to rescuer:
 - I. Patient's name and age
 - II. Patient's telephone number
- 5.5 The app shall contain instructions on attempting CPR.

6 Volunteer Additional Menu Page

The profile page allows the user to check and modify their information.

It also provides an achievement system which aims to record the achievements or accomplishments of the volunteering rescuers. The profile records the historical “save me” requests the rescuer has responded to, and the amount of distance he or she has traveled, and total time he has spent in saving others’ lives. E-medal of honor must be enlightened.

Priority: HIGH

- 6.1 Profile Page of Verified Volunteer shall contain his uploaded CPR certificate
- 6.2 User can check their rescue achievements
 - 6.2.1 User can enter the achievements interface by clicking the “trophy” button
 - 6.2.2 System must light up the medal of honor automatically based on data of responds to “save me” request
 - 6.2.3 The achievement system must be updated every time a new response is initiated.

7 Administrator Page (Web Application)

The admin page is a website for the government agency to monitor the users' personal data, validate users' information and check the rescue event of the Save Me application. This admin page can be used by government agency administrators only.

This function is low priority, which is after the development of Save Me Application.

Priority: LOW

7.1 Administrator Validation

- 7.1.1 Administrators must provide credentials (account and password) for accessing the web admin page. The credentials are under the control of the Administrator manager.

7.2 User's information Check

- 7.2.1 Administrators shall be able to check all registered users' information including name and phone number.
- 7.2.2 Administrators shall be able to check all registered volunteers' uploaded certificates.

7.3 Volunteers' Certificate Validation

- 7.3.1 Administrators shall be able to check all pending volunteers who upload their certificates and wait for approval.
- 7.3.2 Administrators shall be able to approve or reject the certificates uploaded by volunteers after validation.

7.4 History Rescue Statistics Check

- 7.4.1 Administrators shall be able to see history rescue event information including patient's name, rescuer's name, time, location, and other information of each rescue event.

7.5 Real Time Rescue Event Check

- 7.5.1 Administrators shall be able to see ongoing rescue events.