Depending on the level chosen by the user

IOT Smart Wheelchair

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Abstract

There are many paralysis patients who suffer from the difficulty of using the chair for the traditional wheelchair, in addition to the fact that many of them also suffer from loneliness and the absence of anyone to care for them, based on that the idea of our project came.

This project helps people with paralysis who have no one to look after them either.

The wheelchair is moved via a joystick or an Android app that the patient uses to give four way movement commands (left, right, forward, or backward).

The patient can also move the chair by voice commands using the same Android app.

The wheelchair is equipped with an ultrasound sensor,

If the chair falls in any direction, a message will be sent via the sensor to the hospital to obtain a rescue.

The Global Positioning System (GPS) is used to send the exact location of an infected patient so that the hospital sends someone to rescue him.

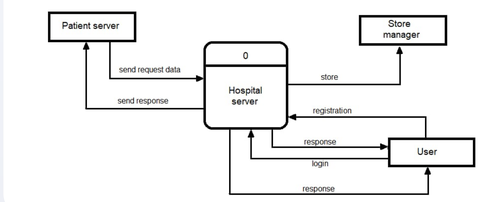
The wheelchair also has a sensor to sense the patient's body temperature.

All patient data read by the sensors is sent to the hospital in order to send patient rescue when needed.

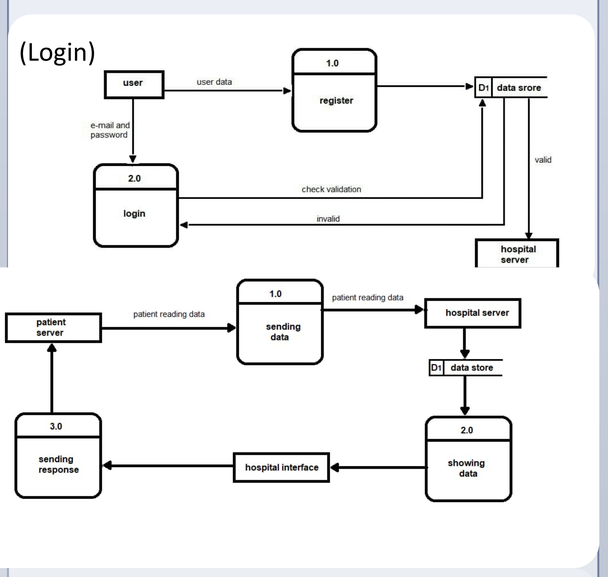
Objectives

Our project aims to help people with special needs who are unable to move, which facilitates movement for them, as well as communicating with the hospital or the rescue agency responsible for them.
The chair contains a set of sensors that take data about the patient, such as his temperature and location, and send it to the hospital via a Wi-Fi module and put it on the hospital's sign to be aware of the patient's condition always
The chair also contains an ultra-sonic sensor, the function of this sensor is that when the chair falls, it is sent to the hospital system, so the hospital sends a rescue to the patient
The chair uses a Bluetooth module that connects the chair with the Android application
The patient moves the chair using the application, either by using voice commands or by using the directional buttons

Methods



Context Diagram



Data Flow Diagram (Level 0)

Used Technologies & Tools

Web Service Tools:

- ✓ PHP/MySQL
- ✓ Java script
- ✓ Css
- ✓ Html

Hardware Tools :

- ✓ Arduino. Uno
- ✓ Hc-05 Bluetooth module
- ✓ Esp. 32
- ✓ Neo 6 m v2 GPS
- ✓ DS18B20 sensor
- ✓ Ultrasonic sensor

Software Tools :

- ✓ Android Studio
- ✓ Arduino ide
- ✓ Web host

References

1. https://developer.android.com/
2. https://www.arduino.cc/
3. https://www.000webhost.com/
4. PHP & MySQL Novice to Ninja
5. esp32-pinout-reference-gpios
6. Android Programming: The Big Nerd Ranch Guide (Paperback)

Expectation Results

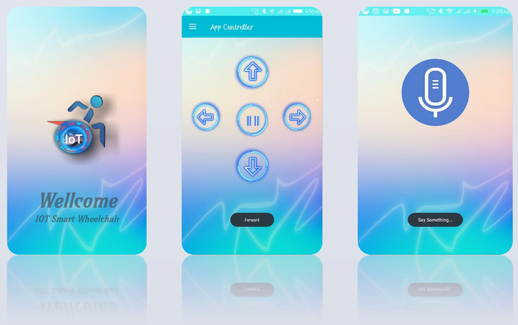
The smart wheelchair will serve those unable to move as well as has no one to take care of the. .

The patient will be in constant contact with the hospital via Wi-Fi, as data about the patient's location and health status will be transferred to the hospital permanently every five seconds.

If the chair is out of balance or the patient's chair falls on the ground, the hospital will receive a notification of that and the rescue will be sent to him according to its location.

The patient will be able to control the movement of the chair via Joystick or via the Android application

The patient can use the Android application to move the chair, either by the directional buttons or by voice commands.



Conclusions

Our project aims to help paralysis patients to move with high safety. we got them safety through using fall detection device by using ultra sonic sensor, Measuring his body temperature, and in case of measuring temperature exceeded 38°C , and also in case of falling, send to hospital and determine patient location so the hospital fastly sends response to the patient, and at the same time it sends rescue to him.

Acknowledgement

The success of any project depends largely on the encouragement and guidelines from others.

We take this opportunity to express our gratitude to the people who have been instrumental in the successful completion of this project. Great thanks for Allah who gives us the power to complete such project.

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