**READ THE OPERATING MANUAL AND OBSERVE ALL FEATURES PROFIDED BY THR SMART CARE SYSTEM!**

**Description:**

Many people are suffering of temporary or permanent disabilities due to illnesses or accidents. For cases of difficult or impossible walking, the use of a wheelchair is becoming essential.

The main objective of our project is the design and development of an IOT system for monitoring chairs electric wheelchairs to increase the safety of the disabled person by monitoring the time remaining before the total discharge of the battery so the stability of wheelchair and environmental factors such as temperature and humidity to help him make the right decision. In addition, this system increases the security of the user by following his path. In fact, a supervisor can access via this application to a real-time trace of this path.

The proposed solution to monitor wheelchair users through a web / mobile app perceived by the disabled, supervisors and an administrator.

The features provided by our application for each user:

**The Disabled Person:**

It is the main actor of the system whose main state and security are the main concerns of the system.

Every wheelchair user can after authentication:

* Visualize real-time measurements of environmental factors, the state of climate and battery level (and possibly the time remaining before the total discharge of the battery).
* Seek his way back to his house (the shortest way) in viewing the map:

The user indicates the final desired destination and the wheelchair system takes complete control of the navigation from the current location to the goal destination.

* Receive notifications and recommendations (when the value of climatic factors is out of reach or that the battery has reached a level low that only allows to go home to be recharged or in case of loss of balance of the user).

**The supervisor:**

A supervisor benefits from the same services as the wheelchair user in regarding climatic values ​​but it also receives an alarm each once a security risk occurs, for example, the disabled person loses balance and falls from the wheelchair or enters an uncovered area. In this situation, the supervisor can inspect the last stored coordinates in the database so that he can take action and save the life of the victim. In addition, it can track the real-time coordinates of the user of the Wheelchair.

So, after the authentication the supervisor can:

* Check climatic factors and battery level,
* Receive a notification whenever a security risks occurs,
* Track user’s path: He/she can know the last location of the wheelchair and the shortest way to reach him on the map,
* Make a call to reassure the user’s conditions: also he/she can ask help from administrator in case of need,
* Change her/his personal data.

**The administrator:**

The system works in the most automated way possible, although the administrator, in some cases, needs to change the system workflow or make a decision in case of need for human interaction. Furthermore, the administrator can manage the users, in fact, he can add accounts users and their corresponding supervisor, delete them, modify their profiles and configure the system (for example, enter ideal climate factor values and the lowest battery level accepted).

So, after the authentication the system administrator can:

* Manage the users of the app: he/she can change their personal information in the database,
* Configure the system,
* Check climatic factors and battery level.
* Track user’s coordinates: he can know where the wheelchair is and how to access it quickly with finding the shortest path on the map,

**Conclusion:**

The main target of the human – wheelchair interface is to allow the user to control the mobility of the chair in less effort and more robustness and safety. When the patient has a severe situation like people special tools might be needed. Moreover, smart wheelchairs may have additional

technologies and facilities, which need more advanced interfacing.

It is concluded that we are trying to build a powerful and helpful application to ease the daily life activities and to give more independent mobility for people with different types of disabilities.

Future work should maybe focus more on the add-on approach, which gives flexibility in

Configurations of sensors, interface, and input devices based on each individual user’s need s and budget. Other options for making the wheelchair friendlier can be added in future also. For example,

entertainment and social communication facilities might be added to the wheelchair. Health

monitoring, first aid, muscle relaxing and rehabilitation tools might be considered as useful add-ons

too.