

Smart Wheelchair

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Introduction

Nowadays , electric powered wheelchairs are very common and efficient for transportation of the old and the disabled, it is certain that electric powered wheelchairs can improve the mobility of physically handicapped people. Although an electric powered wheelchair is more and more important to play the assistant roles, and may bring a happiness and convenience to those who need it, however, architectural barriers like stairs still exist in our living environments to prevent from usefulness. Whilst numerous modifications have been taken in recent years to improve the accessibility of public buildings and transportation services, the problem of negotiating stairs in a wheelchair has not yet been satisfactorily resolved.

In Palestine and Arab countries more than 90% of the buildings don't have way for handicap, so there is difficult on invalid to move without any help. There for we need to design a wheelchair that can solve this problem.

In this project we will make wheelchair climb the stairs, control from two way local control or remote control, and provide by the power from solar cell or electricity plug.

Proposed project

This project help the handicap to be more flex upstairs or passing barrier such as few steps , therefore our design is directed to help important sector of our community. And the solar power that we will use to energize the chair to keep up with direction of using renewable energy.

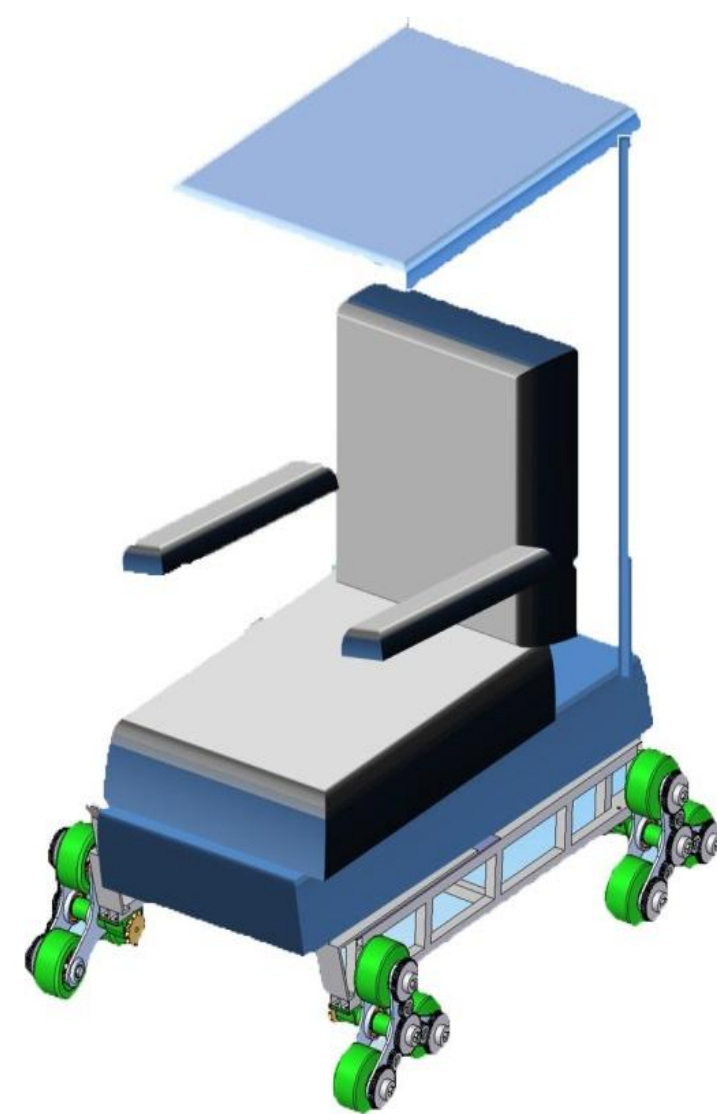


Figure 1: Smart Wheelchair Sketch

System Design and Implementation:

The smart wheelchair implemented with scale 1 to 4.25 form the real design .

The model of smart wheelchair is shown in Figures .

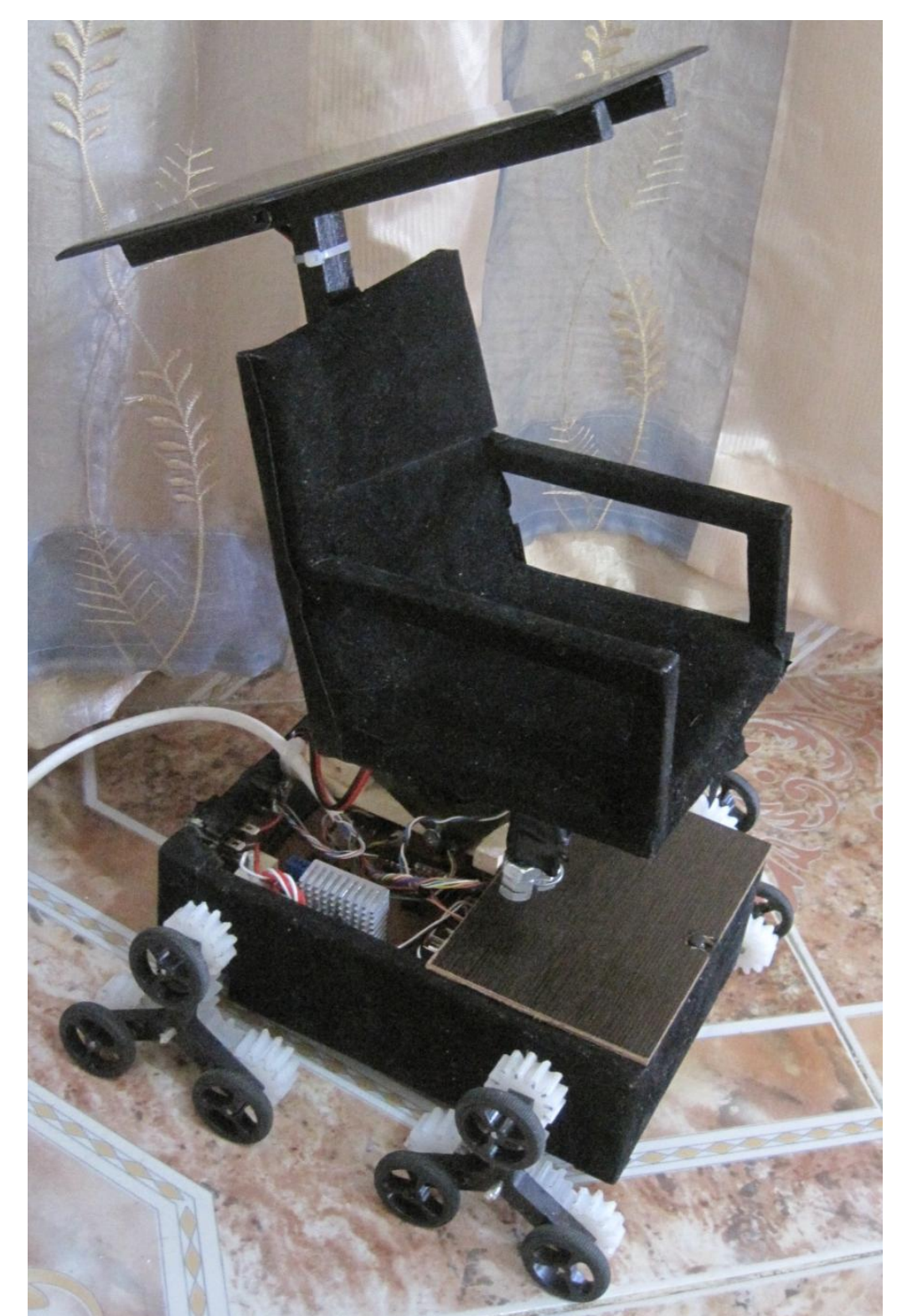


Figure 3: Model of Smart Wheelchair

Project Objectives:

1. Gave the handicap more flexibility to move.
2. Using the solar energy as main source to the wheelchair.
3. Design and implement tri-wheel mechanism.
4. Design and implement IR system to control the wheelchair " remote control " .
5. Design and implement LCD interface for the user.

Results:

1. Building a model of smart wheelchair with scale 1 to 4.25.
2. The smart wheelchair climb the stairs "ascent and descent " .
- 3.The solar energy supply the wheelchair with needed power.
4. Control the smart wheelchair through IR remote.

Project Block Diagram:

Figure 2 is the general block diagram for a project, as illustrated below, the two source of power connected to the charge controller that controlled by the main controller , the controller scan the switches and sensor and make the changes on the motors and LCD.

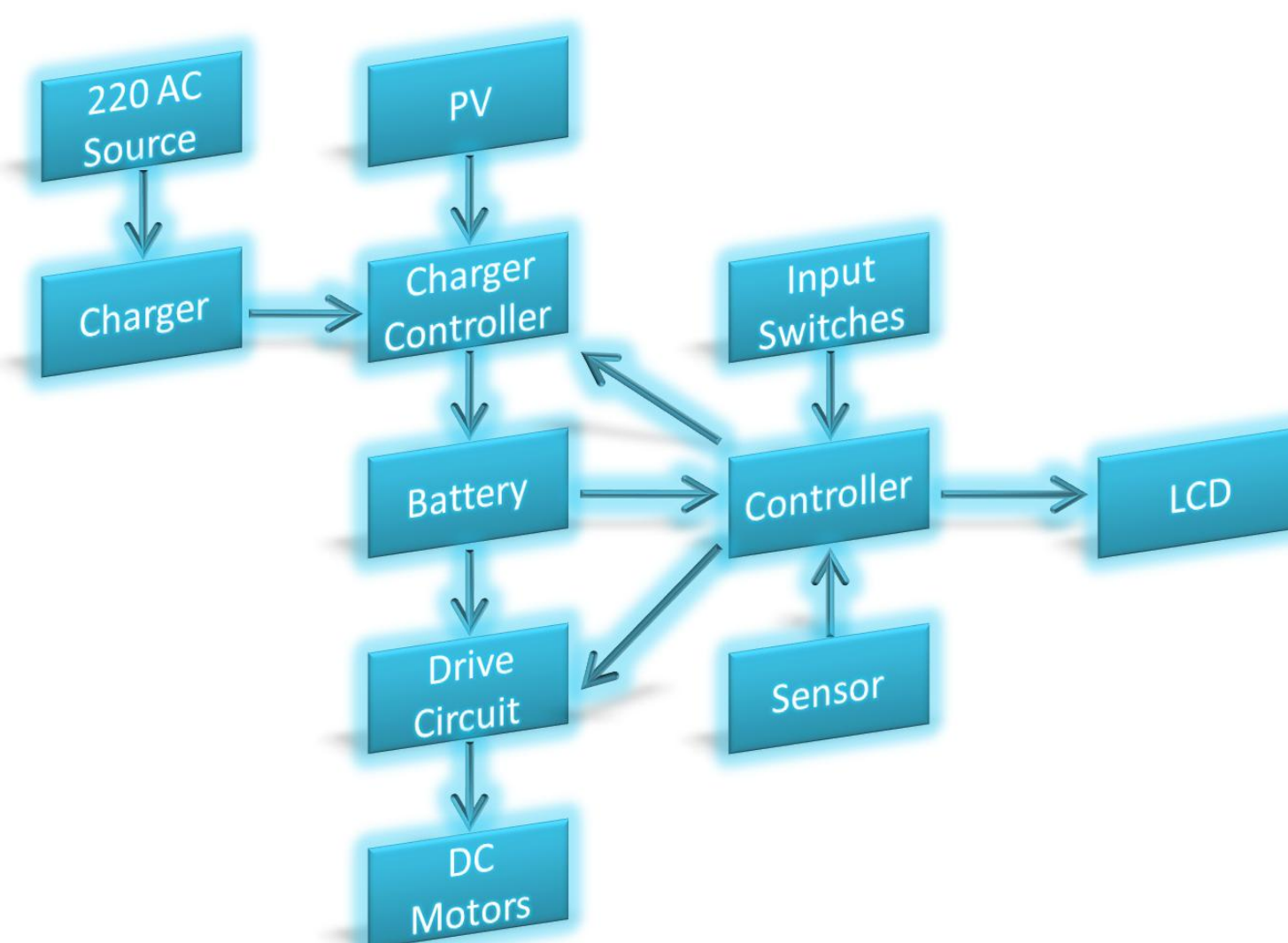


Figure 2 : General Block Diagram.

The general flowchart diagram that controls the smart wheelchair is shown in Figure 4.

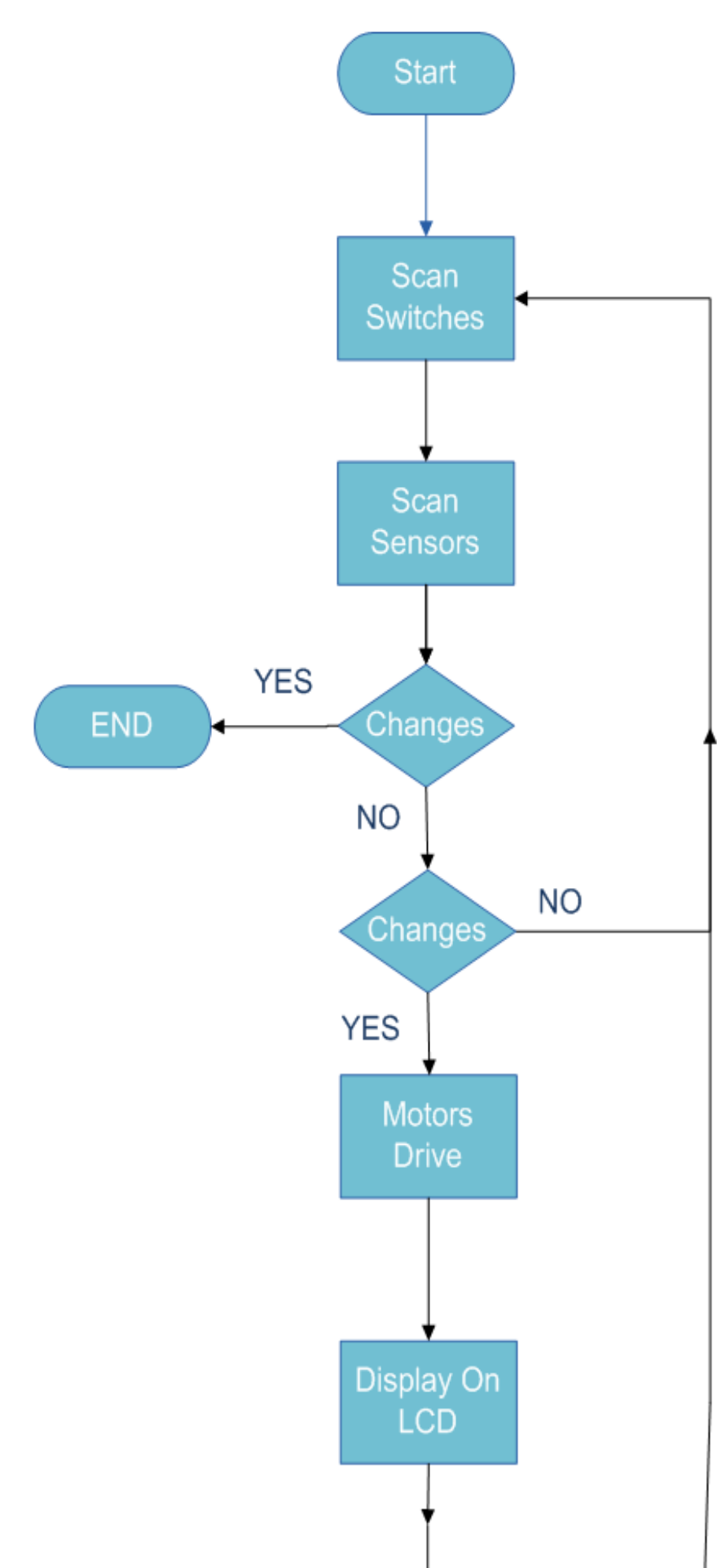


Figure 4: General Flowchart Diagram