NextGen Wheelchair: A Semi-Autonomous Approach for Disabled People Using Head Motion and Digital Twin Technology

UI Design Report

Project Planning Report

CSE – 460

Group: A1

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1. Introduction:

The UI of our system is built on a web application-based platform. In this case, we have HTML, CSS, Bootstrap, and JavaScript in the front end, and JavaScript and Python in the back end to connect the web with the database. The data is integrated with the ESP32 microcontroller to drive the system.

2. Current UI:

a. The application starts with a Sign in Page. The user logs into the system by giving his username and password.

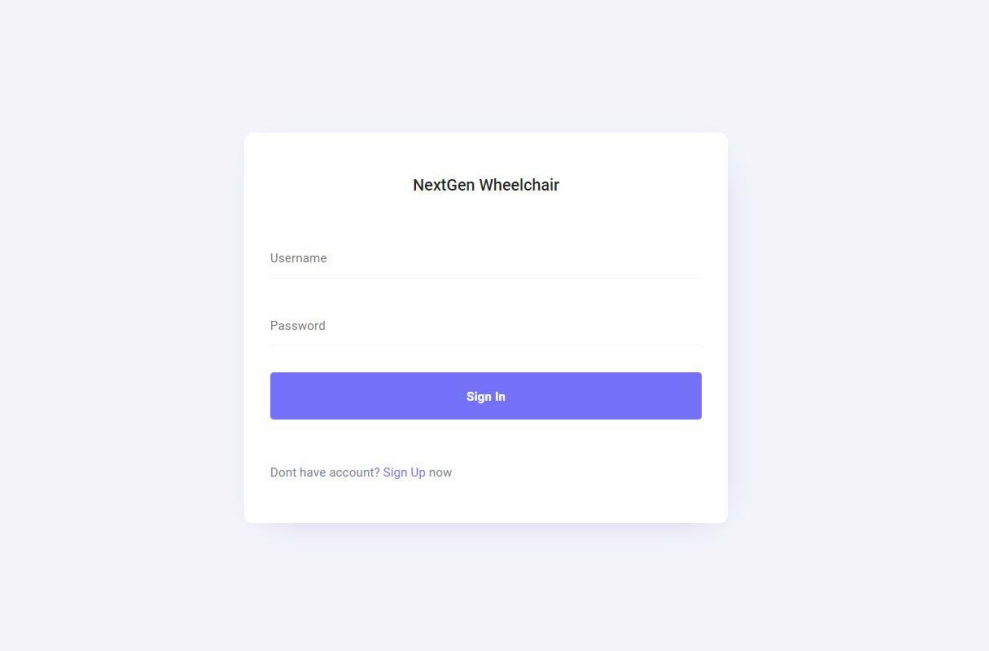


Fig 1: Sign in Page

Deviation:
No Change.

Reason:
The Sign In page is required to use the system for different users. It ensures the security of the system.

b. Then the System Information Page will appear from which all information about the system can be acknowledged.

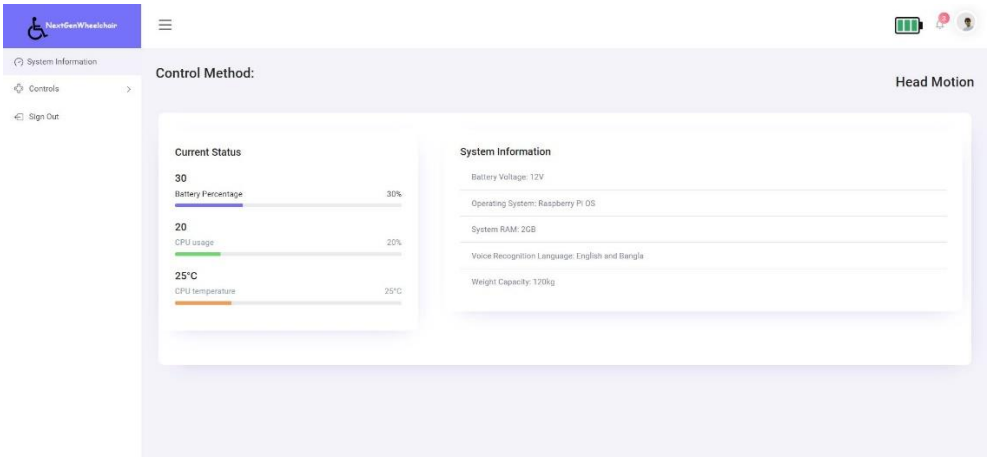
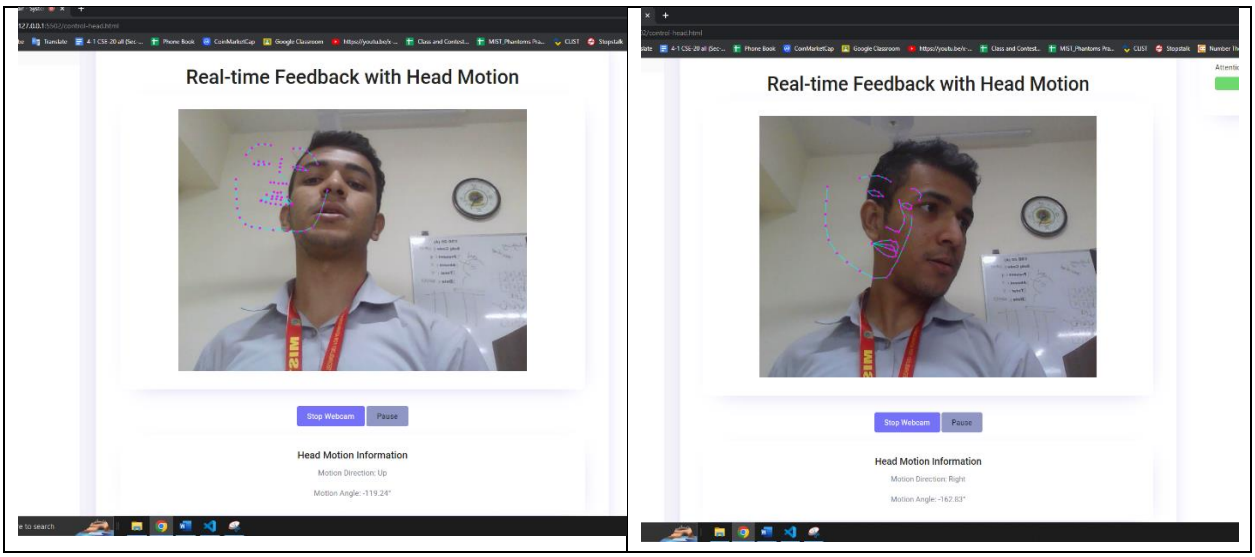


Fig 2: System Information Page

Deviation:
No Change.

Reason:
The page is developed to monitor the overall system. If any kind of emergency situation occurs, the system can enable an emergency alarm and the user can see the overall performance from this page.

c. The Head Motion Page will be there to monitor the patient. Here the directions of the Head motion can be noticed to which the system will be operated.



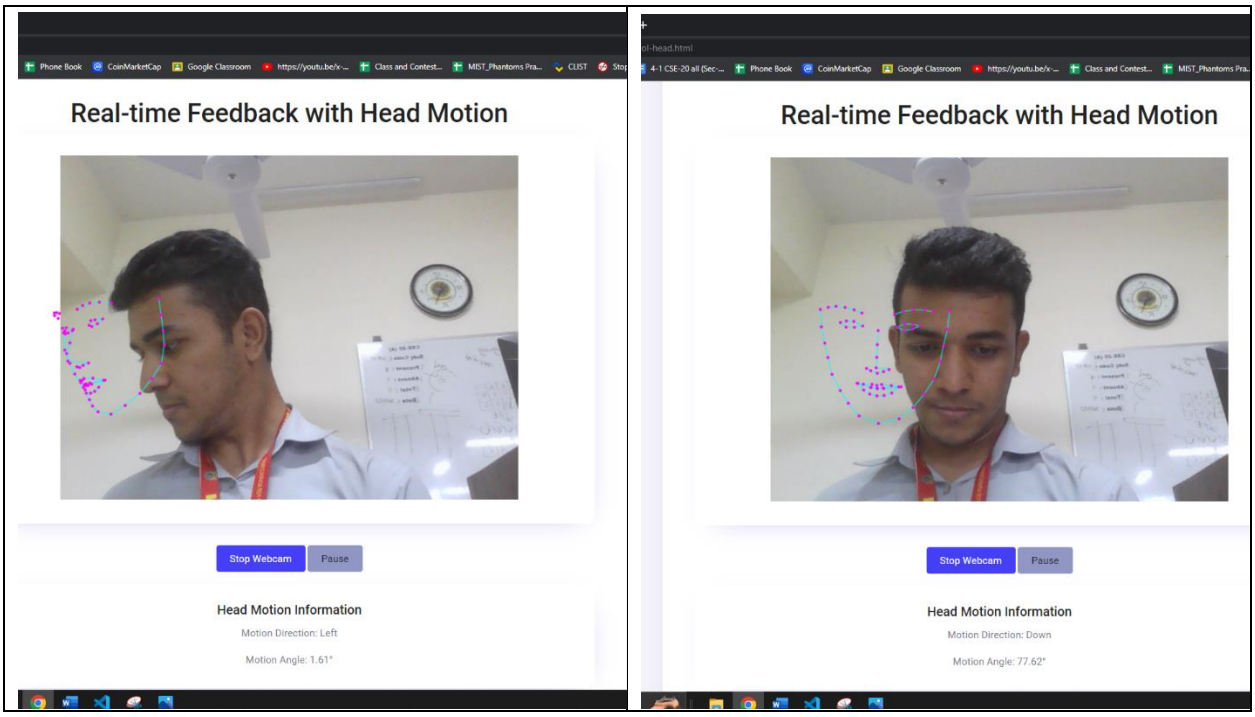


Fig 3: Head Motion Webpage

Deviation:

The Background image is changed. Moreover, the color and contrast of the web page are changed. Video captures are added and directions and angles of the motions are also detected.

Reason:

The page is created to navigate the system through the user's head motion from the webpage.

d. The voice recognition page will recognize the voice speech of the user and operate the system according to the voice commands of the user.

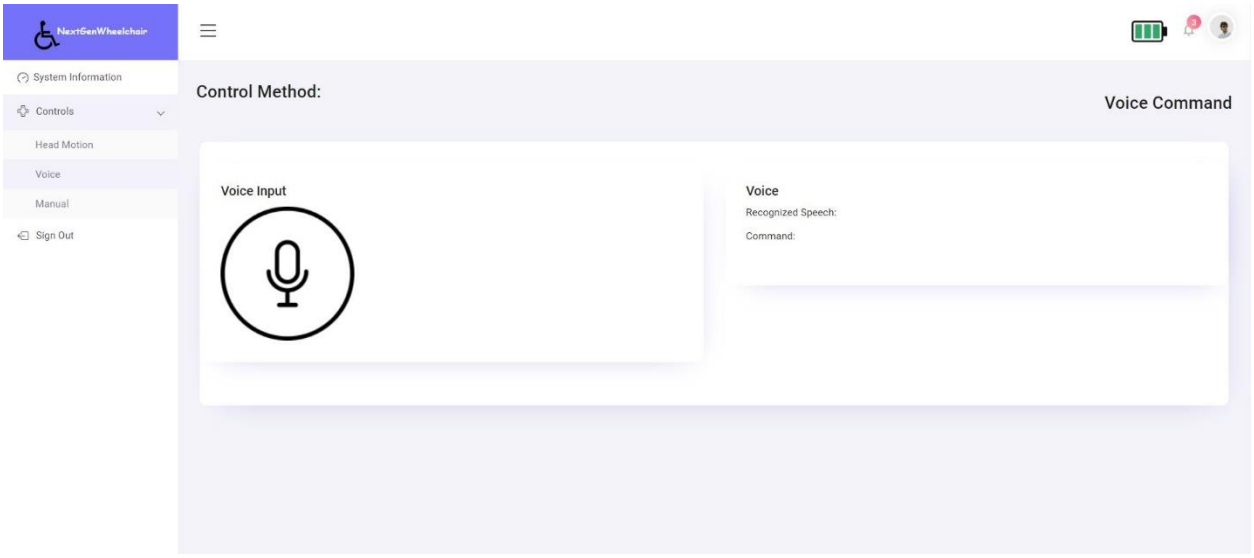


Fig 4: Voice Command Dashboard

Deviation:
No change.

Reason:
The page is created to navigate the system through the user's voice commands from the webpage.
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e. The Joystick page can be used to operate the system through the joystick directions, through the website navigation.

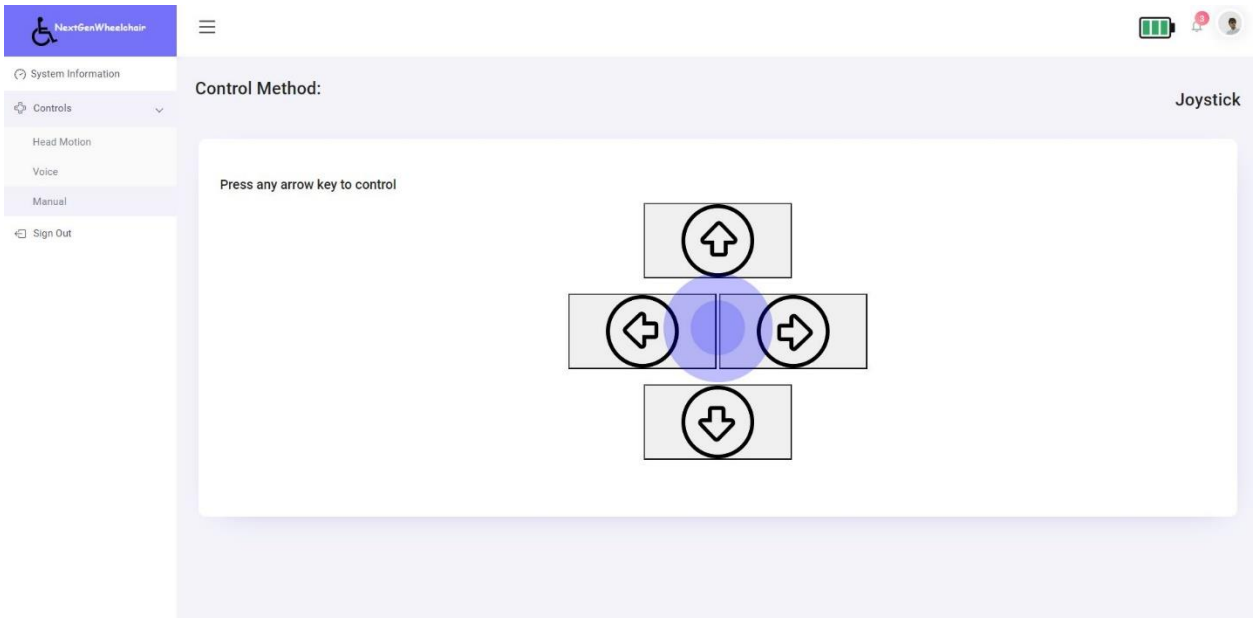

Fig 5: Manual Control Dashboard

Deviation:
No change.

Reason:
The page is created to navigate the system through manual control from the webpage.