CS 371 Section C

Team 9: Alfredo Mendez, Eleanor Katsman, Simrun Heir, Murat Ulu

IoT HTR User Guide

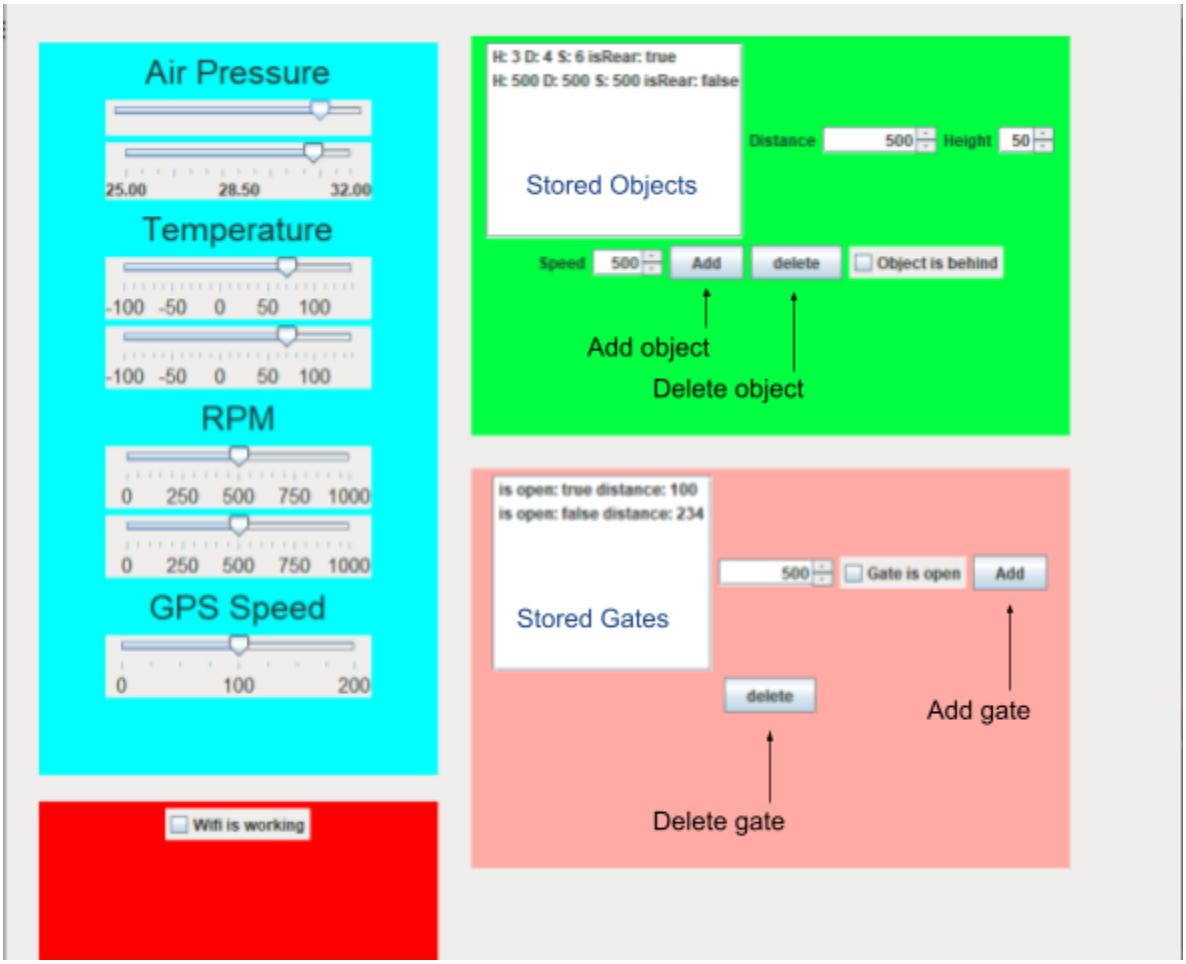
How To Use Our Software:

Our software was written in java which means that you will need a java compiler to run our program. Once you run the compiled program, you will need to log in with existing credentials. By default there are two users that you can log in as; one is a regular user account and the other is an administrator account. The username for the regular user is TestUser and the password is TestPass. Once you have logged in as “Test User”, your username will show up on the top left corner of the screen. All warning messages will show up in the main panel along with a recommended action that you, as a conductor, should make. If needed, there will also be helpful accompanying information. For example, What the slip ratio needs to be over in order to get to a safe slip ratio. Along with the main panel, there are helpful panels right beneath it. These panels use the onboard sensors to tell you information about the train and its environment. The temperature panel will tell you the average temperature collected by the onboard weather sensors. The speed panel will let you know what the speed of the train is, which is calculated by the onboard GPS module. Finally, The WiFi panel will let the user know if the system is connected to WiFi or not. If the panel is green, it means that the system is connected and if it is red, it means that the system is disconnected from WiFi. Additionally, if you log in with the administrator credentials which are username: “admin” and password: “admin”, you will be able to download the log files by clicking on the “download log” button. The option to log out of the system is always available by clicking on the “logout” button at the top of the screen.

How To Test Our Software:

When you run the software, a testing page will also appear that will be used to test our software. There are 4 panels in total in our testing page; the slider panel, the wifi panel, the

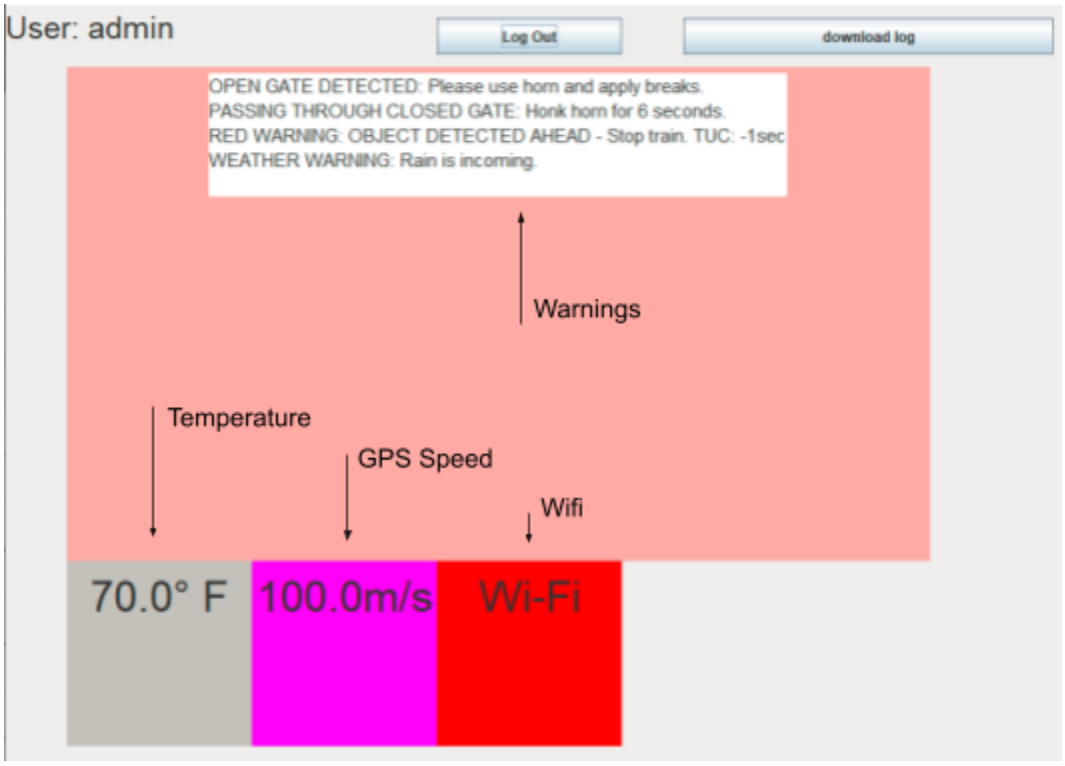
on-track object panel, and the gate panel. In the slider panel, each slider simulates an actual sensor that would be on the train. For example, there are two air pressure sliders because there will be two air pressure sensors on the train. If there are multiple of the same sensor, our system takes the average value of those sliders as expected and performs needed calculations with those calculations. The wifi panel is simply a checkbox to simulate connectivity to WiFi. If the checkbox is checked, it means that the system is connected to WiFi. The on-track object panel is to simulate the Object Detection System. The tester can manually add objects to the list of objects detected. By default there are already 2 objects in the list. These can be deleted by selecting them and clicking the delete button. When you want to add an object to the list, you will need to input the distance (in meters), height (feet), and speed (meters per second) of the object. You will also indicate if the object is behind by checking the checkbox if it is. Once all the information of the object is inputted as intended, you can click the “add” button to add an object to the list with all the inputted information. The object will appear on the list as the information of the object. For example, an object of height of 3 ft, distance of 4 meters, speed of 6 meters/second and it is behind the locomotive will appear as “H: 3 D: 4 S: 6 isRear: true”. The gate panel is similar to the on-track object and works in the exact same way. The only difference is that each object only holds two parameters, the isOpen parameter and distance parameter.



- Sliders on left
    - Air Pressure (in Hg): 2 sensors, so 2 sliders
    - Temperature (in Fahrenheit): 2 sensors, so 2 sliders
    - RPM (rotations per minute): 2 sensors, so 2 sliders
    - GPS Speed (meters per second): 1 sensor, so 1 slider
- “Wifi is working” checkbox
    - If box is filled, wifi is working
    - Otherwise, wifi is not working
- Object parameters
    - Distance (meters)
    - Height (ft)

    - Speed (m/s)
    - Object is behind
        - If filled, the object is behind the train. Otherwise, the object is in front
- Gate Parameters
    - Distance (meters)
    - Gate Is Open
        - If filled, the gate is seen as open, Otherwise, the gate is seen as closed

- Objects and Gates can be added by entering values into the parameter boxes and clicking add, or deleted by clicking them in the top left window within the Object or Gates section and then pressing delete. The window's can store as many objects and gates as the Tester pleases.



- The User's name is displayed in the top left corner

- The top middle of the panel is the “Log Out” button, which returns the User to the log-in prompt page
- The top right of the panel is “download log” button, which allows the administrator to download the current log (see Test Case 17 in Test File)
- Wi-Fi box is green when the train has internet connection, and red when the train is disconnected