User Manual Guide

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1. User Manual

1.1. INTRODUCTION:

Remote Controller is a simple app designed to control a modified RC car which is run with a micro controller or a single board computers. The application emulates a remote control and uses both Wi-Fi and Bluetooth wireless technology to send command. It contains all the function controls to drive the vehicle or perform specific functionalities such as capturing images, acquiring PSD values and also equipped with video record and playback.

1.2. WHAT'S INSIDE:

Once the application launched, the first view controller is displayed. The user will not be able to use controller before initiating the Bluetooth connection. Pressing "scan" will bring user to a table view controller which display surrounding device peripherals.

Note: you need to power up the peripheral device in order for application to detect and display peripheral device into table's row.

Figure 1: Main View Controller

Additionally, you may want to change the command used before you start. This is available by pressing gear button located at the left topmost. Please see details on how to change and managing command setting on the next section.

Once Bluetooth connection established, you can start using the d-pad control. Depending on your preferences, you can also change the orientation into landscape mode.

There are 2 more available buttons located at the bottom. The left button with an image raspberry will enable user to control raspberry (see Figure 2). More details on how to use can be found in section 1.5.

Note: In order to use raspberry controller, you MUST pair the application first with intended raspberry. This cannot be done directly from the app as Apple doesn't let you do that. Thus, you need to close the app and go to Settings > WiFi. Click on the ssid that you want to connect with.

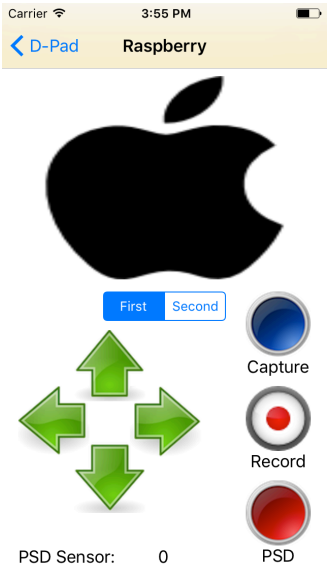

Figure 2: Raspberry View Controller

The second button located at the bottom left of the main controller is to segue to joystick view controller (Figure 3). This is just another type of controller using joystick instead of direction buttons to control vehicles remotely.

Note: You will still need to establish Bluetooth connection first before using controller. Pressing "scan" on the main view controller will delegate and activate the controller.

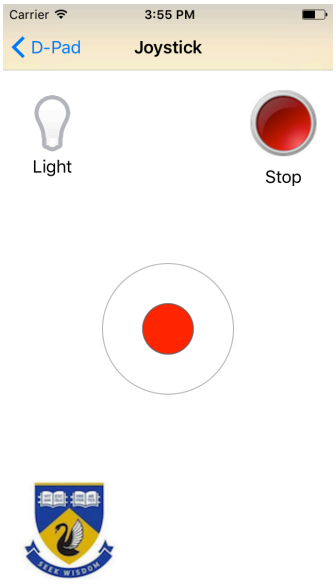

Figure 3: Joystick View Controller

1.3. MANAGING COMMAND SETTING:

Managing command setting is easy but can be quite tricky. By pressing gear button from Main View Controller, the app will bring you to static table with bunch of commands you can adjust independently. By default, the command value is set as in the figure below. Note that these command are only available for Bluetooth connection.

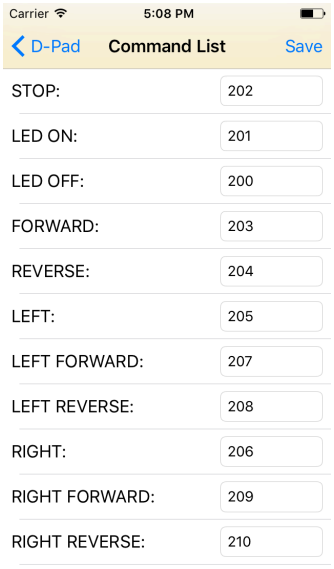

Figure 4: Command List for Bluetooth ONLY

To set a new command values, you only need to click on the box of each row. Once clicked, the textfield box will be empty and keyboard numpad will be displayed on screen. Once you have done editing, you need to click "Done". This located just above the numpad keyboard. Once you are satisfied, you MUST click "Save" button located at the right topmost and this will display alert notification.

Note: The value you can input is only a number and range from 0 to 999

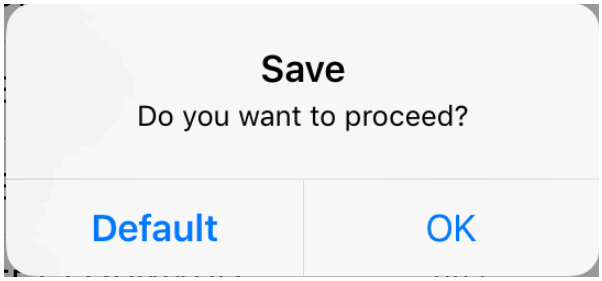

Figure 6: Save Alert Notification

On alert notification, you click OK and you will return to Main View Controller. This will save all commands you have inputted. You can click on "Default" to revert back to original command.

1.4. CONTROLLING RASPBERRY:

Controlling raspberry is really easy but it can be quite tricky as well as we deal most of the function with php. Before you start, please follow the raspberry setup below:

- Put remote.php, remote_1.php, download.php and action.c (optional, if not run with "eyebot" API) inside www folder. This is where all the web-related files located.
- On WiFi connection, look for the destined ssid.

- Open the terminal and connect using ssh. By default, this would be:
  > ssh pi@10.1.1.1
- Once connected, you will need to put default username pi and password raspberry.
- On the terminal, I normally do and type all the following:
  - sudo apt-get update
  - sudo apt-get install –y gpac //to install mp4 converter
  - sudo chown -R www-data /var/www
  - sudo chgrp –R www-data /var/www
  - sudo usermod –a –G video www-data
  - sudo reboot
- After rebooting, you need to connect back to raspberry. From your iPhone, go to Settings > WiFi. Choose the raspberry ssid and connect.
- Test your http by opening your website and type http://10.1.1.1/remote.php This will open up a simple website with list of command. Try to click "Capture" and all commands and see if this works.
- If all above work well, you are set to go to connect your application.

Note: In worst-case scenario, you have already taken and followed all steps above but you failed on the testing part. All you need to do is to open the terminal again and type this:

- sudo chmod –R 777 /var/www

Although I wouldn't recommend this, but I use this to check the result immediately.

Figure 7: First/ Second under Apple Logo

In order to capture an image, you need to press "Capture" button. This will activate the raspberry camera. The snapshot image will be displayed and replace an apple logo above. You can also use "Record" button to record a 30-seconds video. This will activate camera for 30-second continuously (On Raspberry Pi, you can notice this by a solid red of led camera). You can play the video by clicking on "Second". This will bring you to another display view which will run your video. Unfortunately, this will take a few moments before you see your video, as it will download video from web to be displayed on the app. You can alternately switch "First" (going back to image display view) and "Second" (video display view).

The next button is the PSD button. This will display the value of PSD raw value into label located at the bottom. In this case, PSD I am using are the front PSD.