

BLUETOOTH AND WIFI CONTROLLED UGV WITH SEVEN SEGMENT DISPLAY

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Abstract

This manual shows how to control the UGV using Bluetooth and Wifi and displays in the Seven Segment according to the Android apps.

1 Components

Components	Values	Quantity
Vaman Bord		1
JumperWires	M-F, F-F	15
Breadboard		1
UGV-kit		1
Seven-Segment display		1
Resistor	220	1
Motor Driver IC	L293	1
USB-UART		1

2 Implementation

1. Connect the USB-UART pins to the Vaman ESP32 pins according to Table

VAMAN LC PINS	UART PINS
GND	GND
ENB	ENB
TXD0	RXD
RXD0	TXD
0	IO0
5V	5V

2. Follow the instructions which are given below:

```
# To copy repository
```

```
svn co https://github.com/sindhu023/FWC/tree/main/WIFI_BLE_UGV
cd WIFI_BLE_UGV
# To build ESP32 firmware
cd esp32_pwmctrl
pio run
# To flash ESP32 firmware, connect usb-uart adapter
pio run -t nobuild -t upload
# If using termux, use scp to send .pio/build/esp32doit-devkit-v1/firmware.bin to PC

# To build m4 firmware
cd m4_pwmctrl/GCC_Project
# modify line 140 of config.mk to setup path to pygmy-sdk or qorc-sdk
# default path is /data/data/com.termux/files/home/pygmy-dev/pygmy-sdk
make
# If using termux, Use scp to send output/m4_pwmctrl.bin to PC

# To build fpga source
cd fpga_pwmctrl/rtl
ql_symbiflow --compile -d ql-eos-s3 -P pu64 -v *.v -t AL4S3B_FPGA_Top -p quickfeather.pcf --dump jlink binary
# If using termux, use scp to send AL4S3B_FPGA_Top.bin to PC

# To flash eos s3 soc, connect usb cable to vaman board
sudo python3 <Type path to tiny fpga programmer application> --port /dev/ttyACM0 --appfpga AL4S3B_FPGA_Top.bin --m4app m4_pwmctrl.bin --mode m4-fpga --reset
```

3. After uploading the code to the vaman board as per the given instructions, then download the Dabble apk and WifiToyCar app install on the Android Mobile.
4. In Dabble App.Select gamepad option in the app and then select joystick mode.
5. Connect esp32 by clicking bluetooth icon in the app, which enables bluetooth and esp32 will get connected.
6. Now connect the Seven Segment to the Vaman board according to the given connection given in the table

VAMAN PINS	SEVEN SEGMENT PINS
IO-32	a
IO-33	b
IO-25	c
IO-26	d
IO-27	e
IO-14	f
IO-12	g

7. Now Sevensegment display is controlled for every button pressed on the joystick on the Dabble application.
8. Esp32 is connected to mobile using hotspot.Now connect Esp32 to WifiToyCar using IP Address.Now the display is controlled using WifiToyCar application.