Telemetry Project: Renato Fainshten and Michael Barkovsky

Create ZumoPi Environment:

1) With Pimager, download and create image of UBUNTU DESKTOP 22.04 LTS (64-BIT)
   Raspberry Pi OS – Raspberry Pi

2) Set credentials for ubuntu:
   Your name: zumo
   Computer name: zumo-lab
   Username: pi
   Pass: zumo

3) Run **zumopi_script.sh**:
   Note: when installing driver for Wi-Fi EW-7822ULC, when the following prompted, answer accordingly:

```
For the prompt "Do you want to edit the driver options file now? [y/N], enter n
For the prompt "Do you want to reboot now? {recommended} [y/N] enter y
```

4) Run **ros2_script.sh**.

5) Manual stuff to do:
   a) Connect the WIFI dongle to local network (same as the control station).

   b) Install libraries for Arduino according to:
      Zumo libraries
      Follow these steps:
      https://www.pololu.com/docs/0J63/5.2

      Zumo32U4 library
      Follow these steps:
      Pololu - 6. Zumo 32U4 Arduino library
      (port will probably be /dev/ttyACM0)

      JSON
      TOOLS -> Manage Libraries -> Install ArduinoJson (6.21.0)

   c) Configure camera:
      $v4l2-ctl --list-devices
      Search in the list of devices the location of “mmal service 16.1” (should be /dev/videoX)
      $ffplay /dev/video<number>

      If mmal service 16.1 doesn’t appear, enable trough raspi-config:
      $sudo apt install raspi-config
      $sudo raspi-config

Interface Options -> Legacy Camera -> Enable
Reboot

Add user to video group:
$sudo usermod -a -G video $LOGNAME
Logout and log back in

d) Enable remote desktop:
Settings → Sharing → Remote Desktop → Enable **Remote Desktop** and **Remote Control**
Set user name: **pi** Password: **zumo**

e) Copy ***ros2_ws*** and ***arduino_serial_interface*** directories to your home directory from: https://github.com/renatof25/zumopi_telemetry_system/tree/main

Build ROS2 again: (may take some time)

$cd ~/ros2_ws

$colcon build

Create Remote Control Station Environment:

1) Run **ros2_script.sh**.
2) Copy ***ros2_ws*** directory to your home directory from:
https://github.com/renatof25/zumopi_telemetry_system/tree/main

Build ROS2 again: (may take some time)

$cd ~/ros2_ws

$colcon build

Reference sites:
EW-7822ULC driver installation:
Install EW-7822ULC/UTC/UAD in Ubuntu 22.04 (or Mint 21) kernel 5.15 : EDiMAX (freshdesk.com)

Arduino CLI:
https://siytek.com/arduino-cli-raspberry-pi/

UPS:
X728-Software - Geekworm Wiki