Fire Detection Documentation

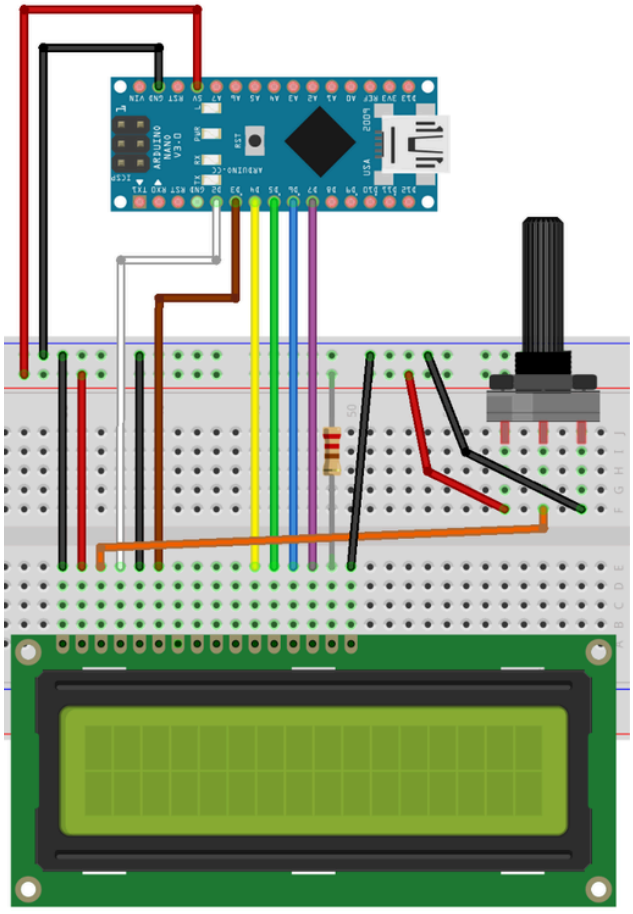
Requirements:

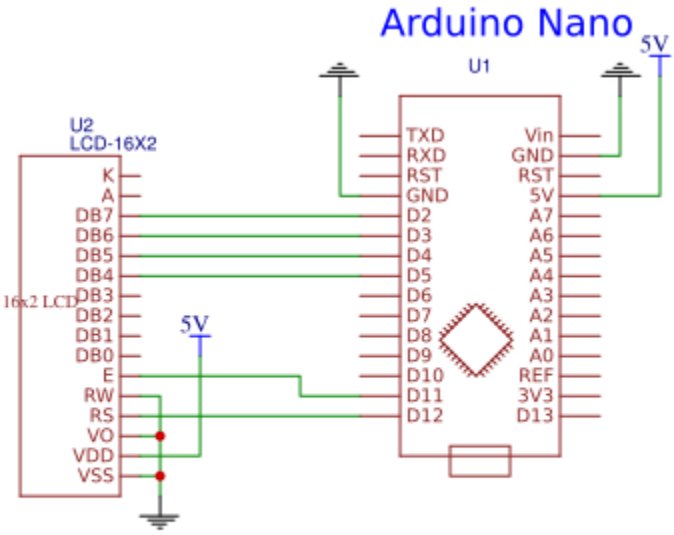
1. Latest version of python3
2. Arduino IDE with Mini-B usb cable
3. Supported version of node-red and npm
4. node-red-dashboard
5. A working camera module
6. Emsol Kit

Procedure:

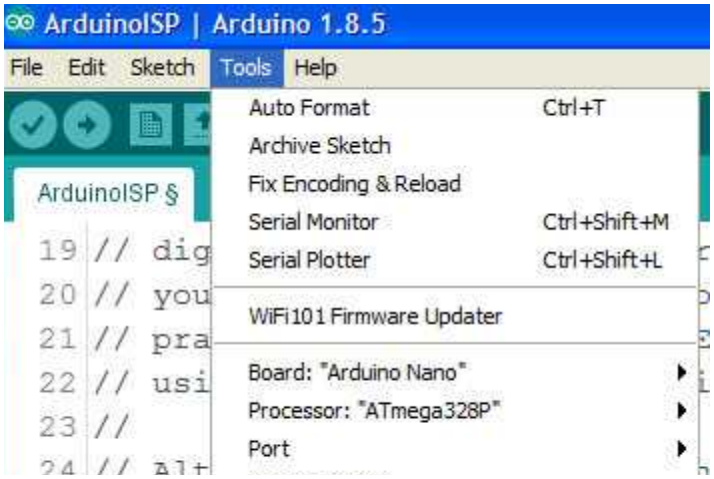
1. Extract the given zip file

2. Follow the schematics to connect the wires accordingly and double check it before powering the kit.





3. Connect the kit with your computer using the USB cable and complie the “notification.ino” code to the Arduino nano board.



Note: Select the port and board accordingly. If no devices are shown in the port, check the USB connection again.

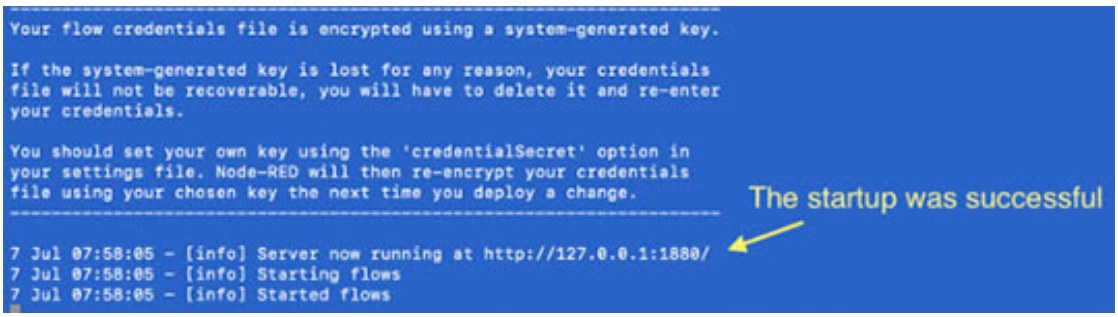
4. Navigate inside the folder in the terminal and run “pip install -r requirements.txt”

```
C:\>py -m pip install -r "C:\requirements.txt"
Collecting pillow==3.2.0
  Using cached Pillow-3.2.0.zip (10.5 MB)
  Preparing metadata (setup.py) ... done
```

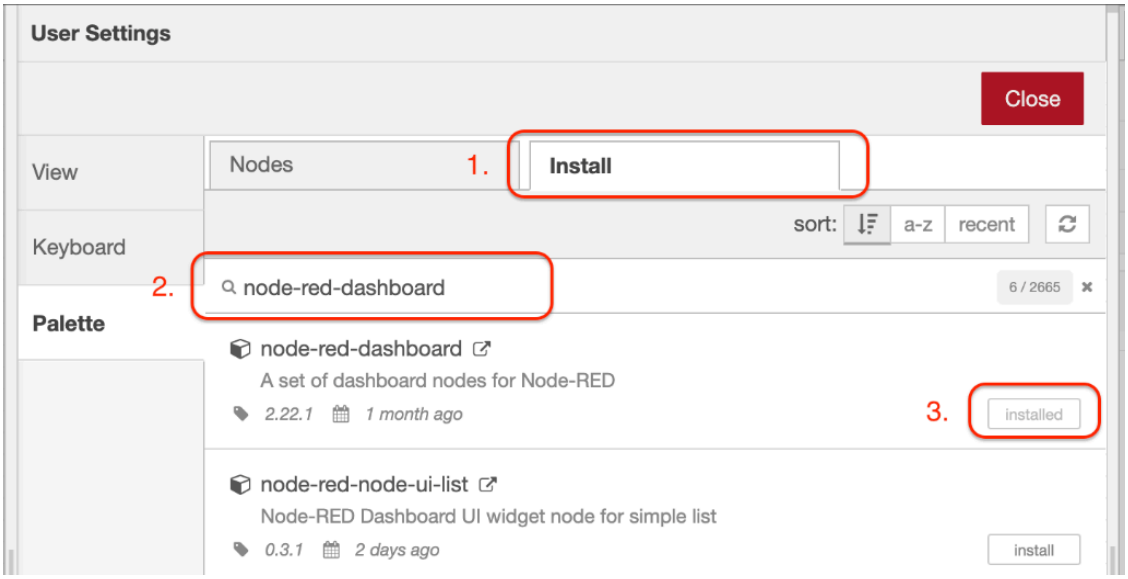
5. To check the python script is working type “python3 fire-detection.py”. Make sure to change the highlighted text in the python code to your com device name (arduino Port).

```
cam = cv2.VideoCapture(0)
ser = serial.Serial('/dev/ttyUSB0', 115200, timeout=1)
ser.write(b"0!\n")
```

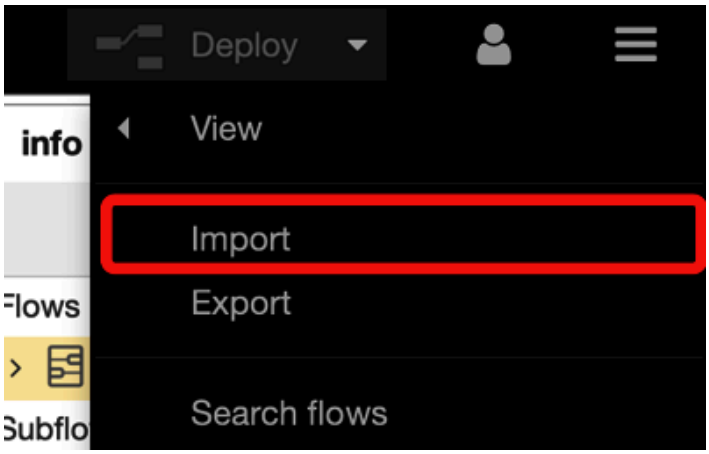
6. Now launch node-red and open link shown in the terminal



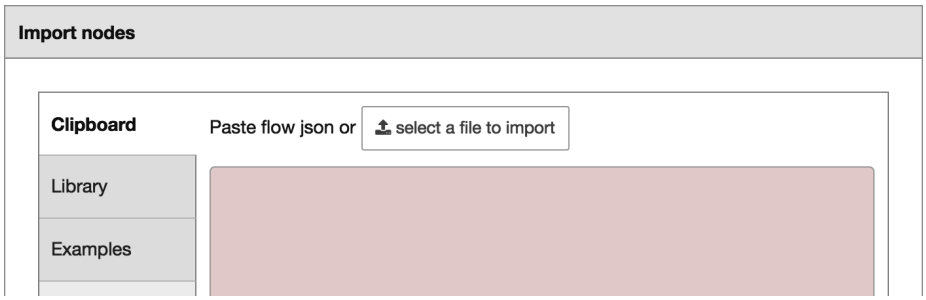
7. Navigate to user settings in the right top corner and install “node-red-dashboard”



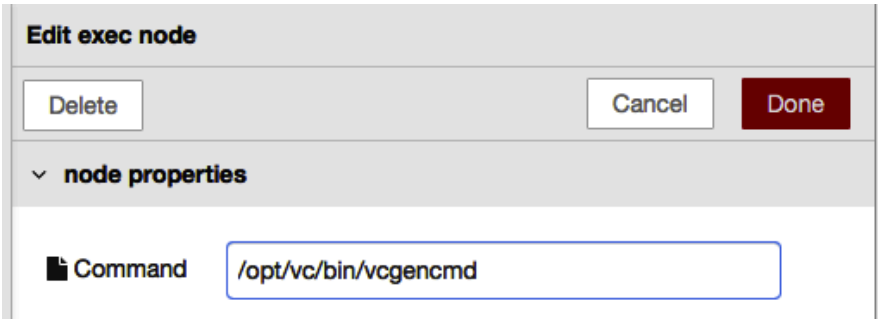
8. Open the import flows dialog box by navigation to the menu button placed on the top right corner.



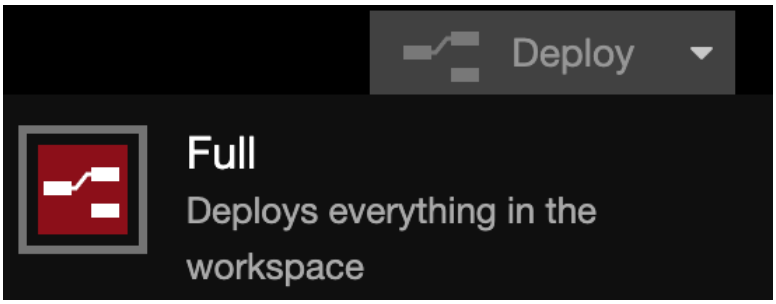
9. Click the “select a file to import” and choose the “Fire-Detection.json“ file from the extracted folder.



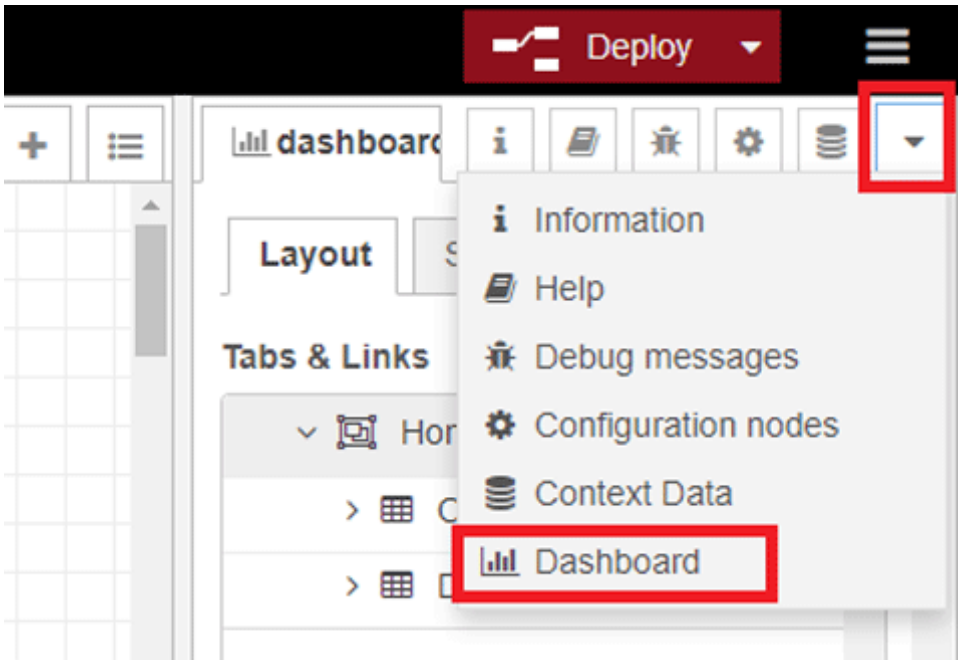
10. Now copy the absolute (full) path of the “fire-detection.py” file in your computer and paste it in the node-red exec node (second block) by double clicking it. Type python3 and paste the copied file path.



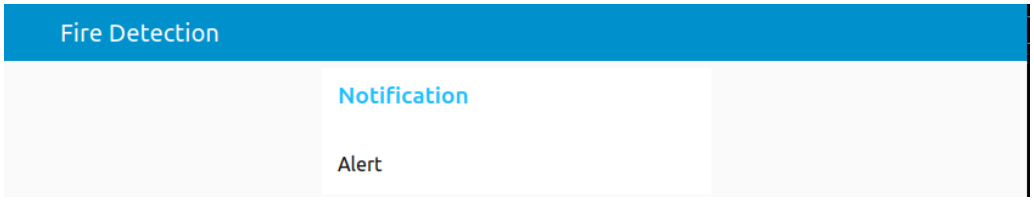
11. Finally click deploy

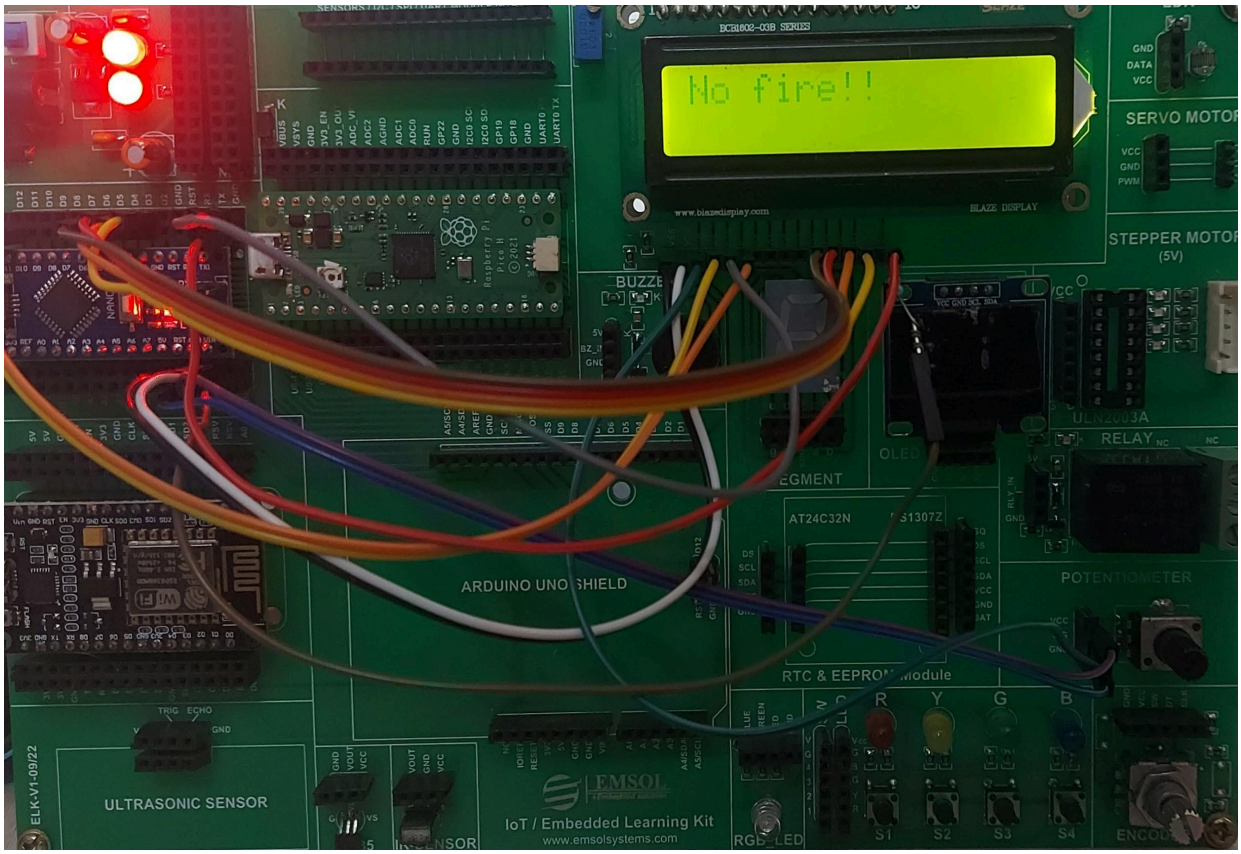


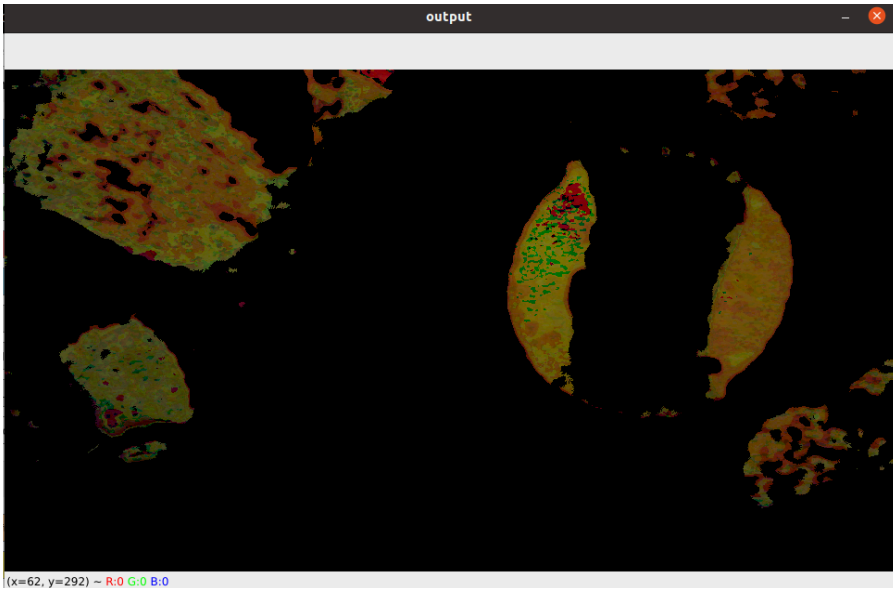
12. Click the dashboard button to view the dashboard in a new tab

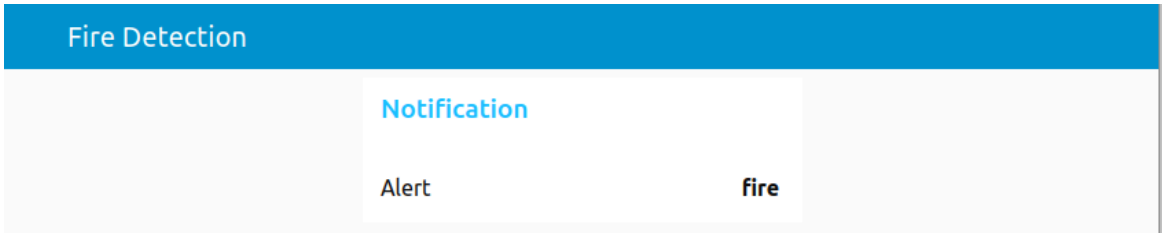


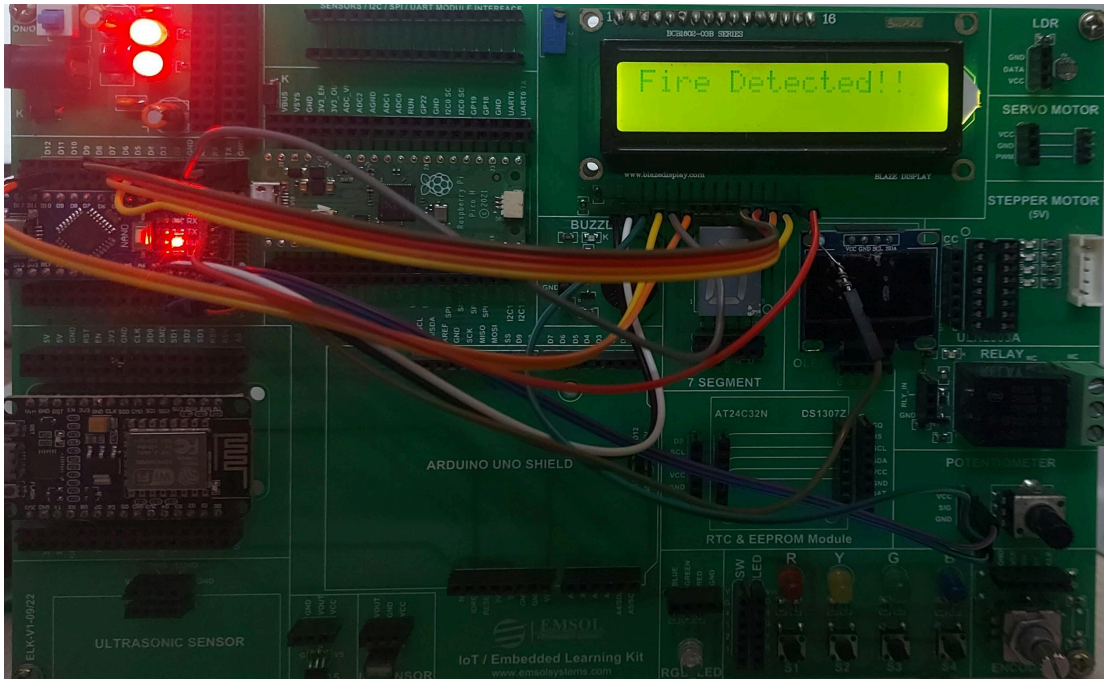
13. Show a fire image or source of fire near the camera and the dashboard will notify fire and the LCD in the kit displays fire is detected.






output
(x=62, y=292) ~ R:0 G:0 B:0


Fire Detection
Notification
Alert
fire


Fire Detected!!
LDR
SERVO MOTOR
STEPPER MOTOR
(5V)
BUZZL
RELAY
7 SEGMENT
AT24C32N
DS1307Z
ARDUINO UNO SHIELD
RTC & EEPROM Module
ULTRASONIC SENSOR
IoT / Embedded Learning Kit