TRAFFIC MANAGEMENT USING IOT
PHASE-3

DONE BY:

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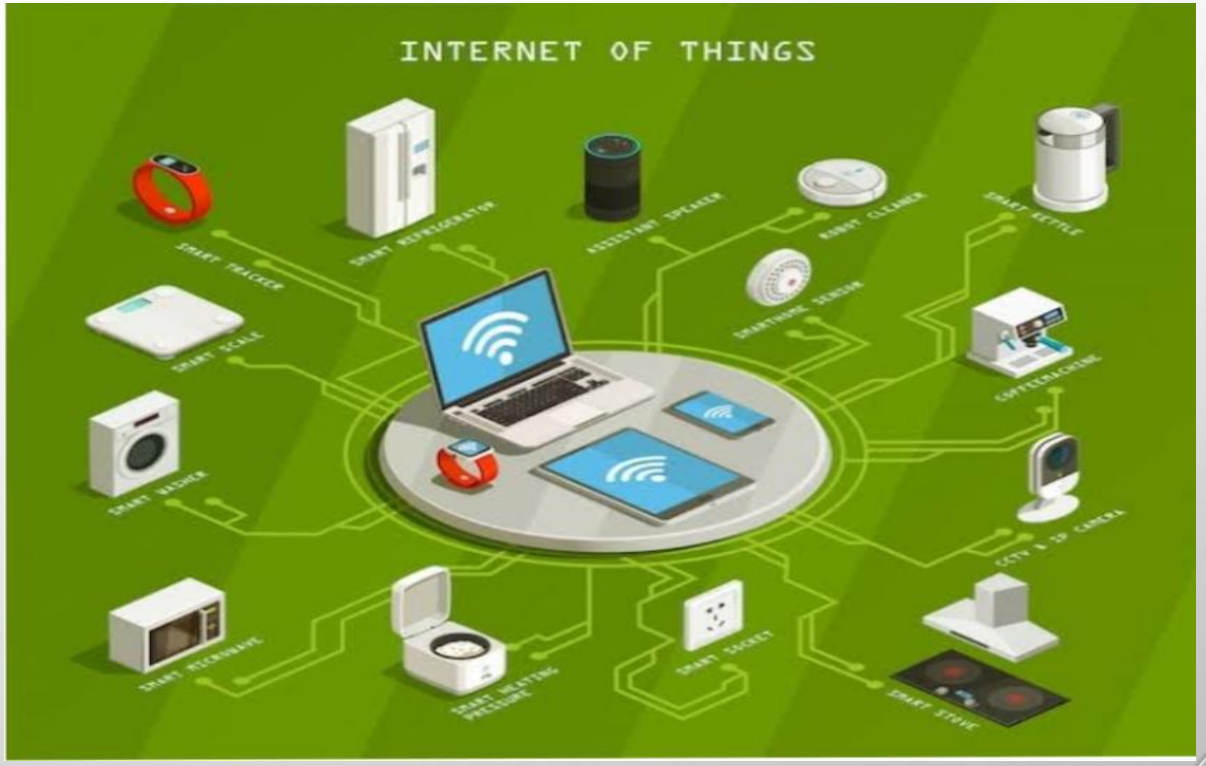
IOT DEVICES WITH THEIR PYTHON CODES

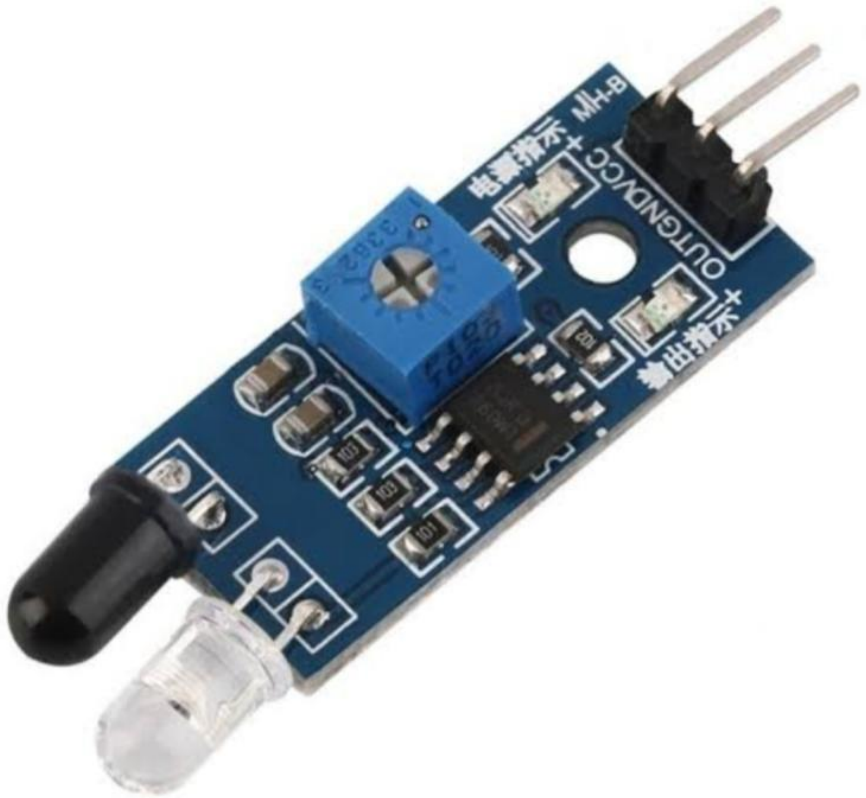
SENSORS USED IN TRAFFIC MANAGEMENT ARE :

- *INFRA RED SENSORS*
- *RASPERRY PI*
- *ULTRASONIC SENSOR*
- *CAMERA SENSORS*



INFRARED SENSOR

- IR SENSOR IS AN ELECTRONIC DEVICE THAT EMITS THE LIGHT IN ORDER TO SENSE SOME OBJECT OF THE SURROUNDINGS. AN IR SENSOR CAN MEASURE THE HEAT OF AN OBJECT AS WELL AS DETECTS THE MOTION. USUALLY, IN THE INFRARED SPECTRUM, ALL THE OBJECTS RADIATE SOME FORM OF THERMAL RADIATION. THESE TYPES OF RADIATIONS ARE INVISIBLE TO OUR EYES, BUT INFRARED SENSOR CAN DETECT THESE RADIATIONS. THE EMITTER IS SIMPLY AN IR LED (LIGHT EMITTING DIODE) AND THE DETECTOR IS SIMPLY AN IR PHOTODIODE. PHOTODIODE IS SENSITIVE TO IR LIGHT OF THE SAMEWAVELENGTH WHICH IS EMITTED BY THE IR LED. WHEN IR LIGHT FALLS ON THE PHOTODIODE, THE RESISTANCES AND THE OUTPUT VOLTAGES WILL CHANGE IN PROPORTION TO THE MAGNITUDE OF THE IR LIGHT RECEIVED.

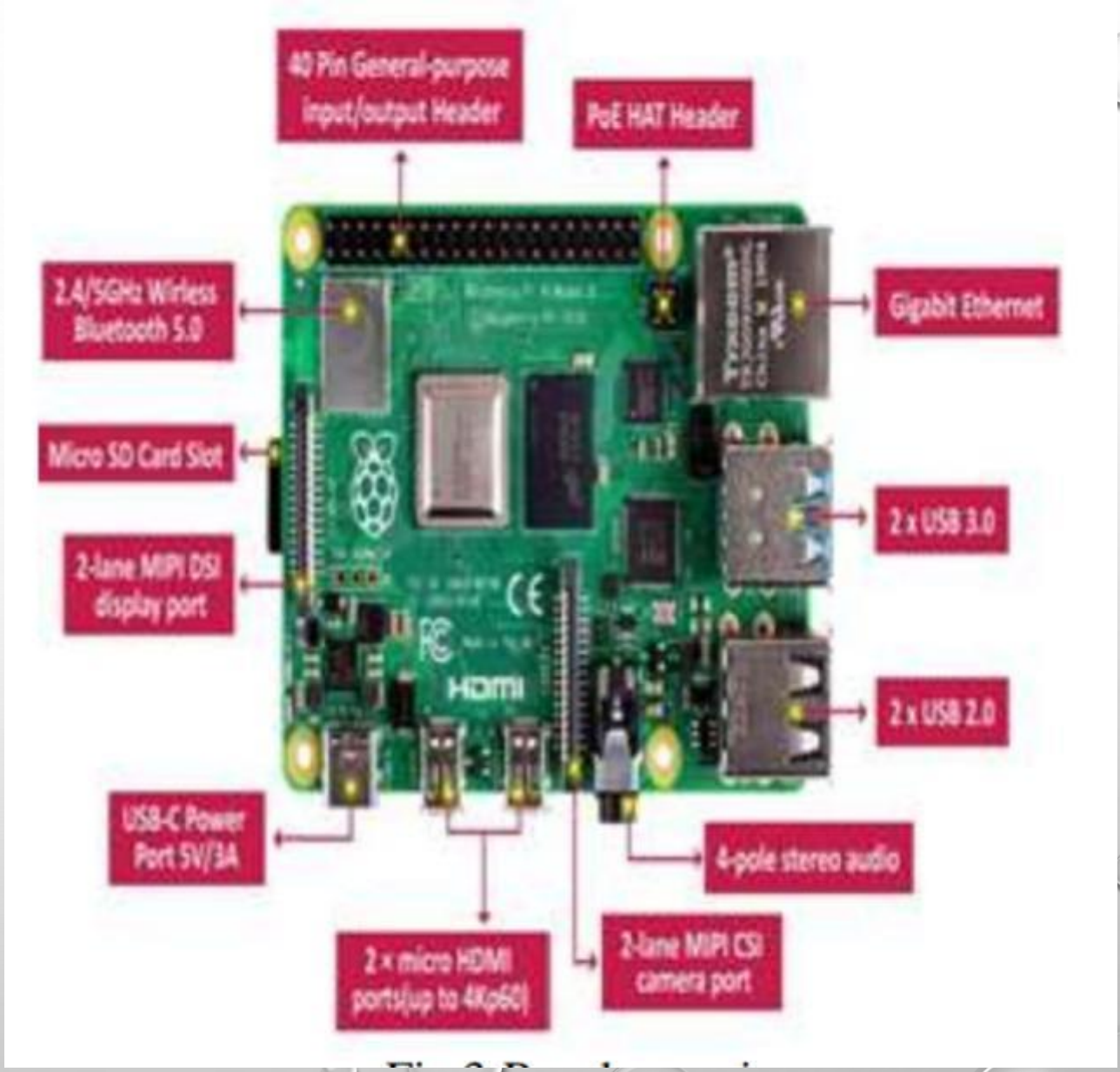


ULTRASONIC SENSOR

- *THE HALL EFFECT IS THE MOST COMMON METHOD OF MEASURING MAGNETIC FIELD AND THE HALL EFFECT SENSORS ARE VERY POPULAR AND HAVE MANY CONTEMPORARY APPLICATIONS. FOR EXAMPLE, THEY CAN BE FOUND IN VEHICLES AS WHEEL SPEED SENSORS AS WELL AS CRANKSHAFT OR CAMSHAFT POSITION SENSORS. IF WE BRING SOME MAGNETIC FIELD NEAR THE PLATE WE WOULD DISTURB THE STRAIGHT FLOW OF THE CHARGE CARRIERS DUE TO A FORCE, CALLED LORENTZ FORCE. IN SUCH A CASE THE ELECTRONS WOULD DEFLECT TO ONE SIDE OF THE PLATE AND THE POSITIVE HOLES TO THE OTHER SIDE OF THE PLATE. THIS MEANS IF WE PUT A METER NOW BETWEEN THE OTHER TWO IDES WE WILL GET SOME VOLTAGE WHICH CAN BE MEASURED.*

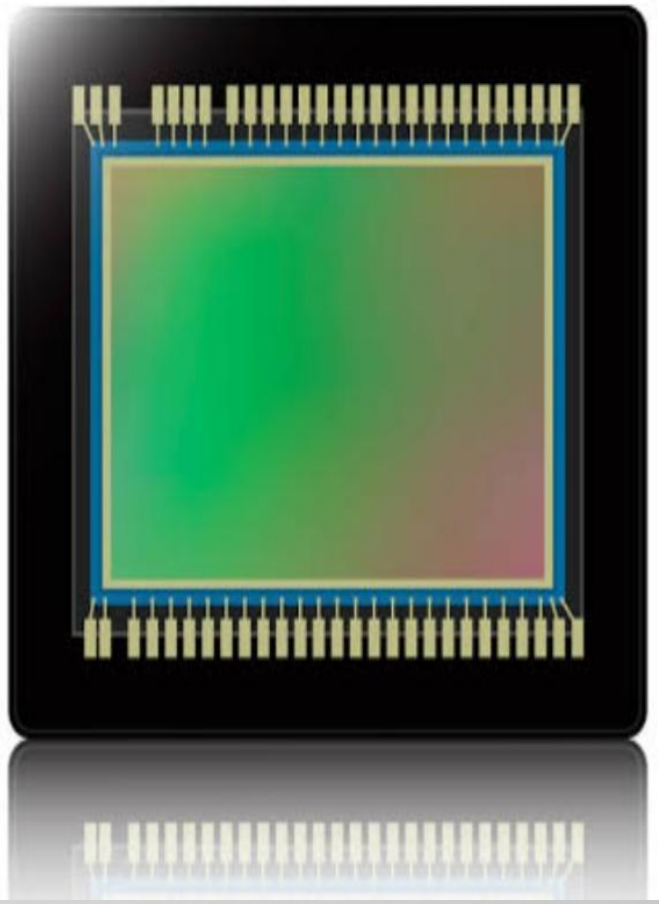
RASPBERRY PI

THE RASPBERRY PI IS A SMALL SIZED PERSONAL COMPUTER (PC) WHICH IS STRUCTURED AND FABRICATED BY THE RASPBERRY PI FOUNDATION (A NON-BENEFIT ASSOCIATION) WHICH IS DEDICATED TO MAKING PCS AND PROGRAMMING GUIDELINES AS EFFECTIVELY OPEN AS CONCEIVABLE TO THE INTENDED INTEREST GROUP.



CAMERA SENSORS

AN IMAGE SENSOR OR IMAGER IS A SENSOR THAT DETECTS AND CONVEYS INFORMATION USED TO FORM AN IMAGE. IT DOES SO BY CONVERTING THE VARIABLE ATTENUATION OF LIGHT WAVES (AS THEY PASS THROUGH OR REFLECT OFF OBJECTS) INTO SIGNALS, SMALL BURSTS OF CURRENT THAT CONVEY THE INFORMATION.



PYTHON CODE

```
DEF __INIT__(SELF, CONFIG = {}):
    # SETTING THE DEFAULT CONFIGURATION
    SELF.SET_DEFAULT_CONFIG()
    # UPDATING THE CONFIGURATION
    FOR ATTR, VAL IN CONFIG.ITEMS():
    SETATTR(SELF, ATTR, VAL)  IMPORTING THE ROAD CLASS
FROM .ROAD IMPORT ROAD
 # DEFINING THE SIMULATOR CLASS
CLASS SIMULATOR:
  DEF __INIT__(SELF, CONFIG = {}):
    # SETTING DEFAULT CONFIGURATION
    SELF.SET_DEFAULT_CONFIG()
    # UPDATING CONFIGURATION
    FOR ATTR, VAL IN CONFIG.ITEMS():        SETATTR(SELF, ATTR, VAL)
   DEF SET_DEFAULT_CONFIG(SELF):
    # TIME KEEPING
    SELF.T = 0.0
    # FRAME COUNT KEEPING
    SELF.FRAME_COUNT = 0
    # SIMULATION TIME STEP
    SELF.DT = 1/60
    # ARRAY TO STORE ROADS
    SELF.ROADS = []
  DEF CREATEROAD(SELF, START, END):
    THE_ROAD = ROAD(START, END)
```

WORKING PROTOTYPE

THANK YOU