

ECS-1001 – LED BIKE VEST



VIT-AP
UNIVERSITY

TeamMembers

NIRDESH SINGH 20BCE7062

VARIGONDA ANJANI GAYATHRI 20BCI7003

MANYA ARORA 20BCE7441

SAKETI BHAVANI 20BES7073

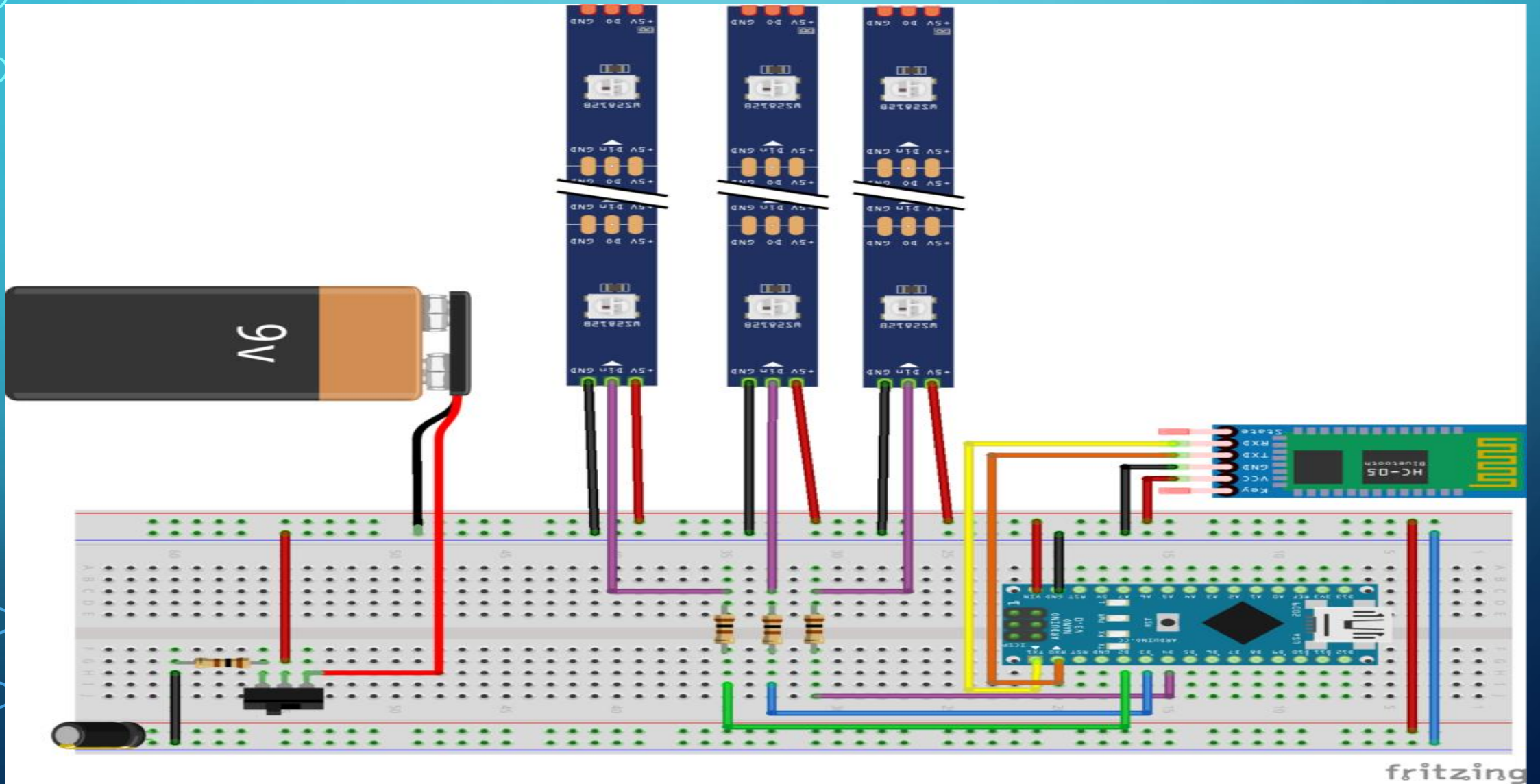
DEVARAPU KUSUMA 20BEC7074

ALAGAPPAN SP 20BCE7211

Professor:

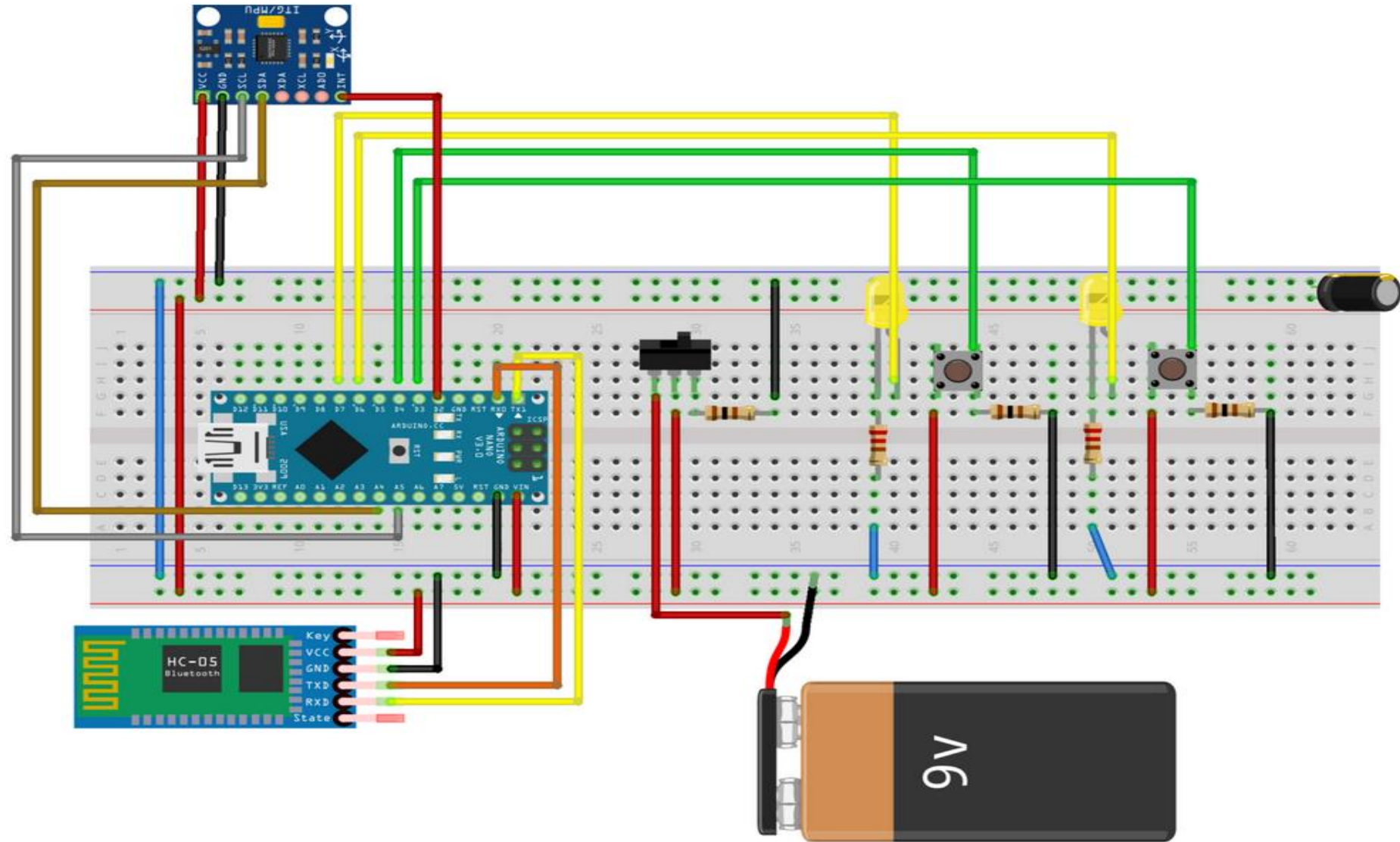
Dr. Hari Kishan Kondaveeti

Vest circuit(Master):-



Handle circuit(Slave):-

The diagram illustrates the wiring for a slave circuit. It features an Arduino Uno microcontroller, an HC-05 Bluetooth module, an L293D motor driver, two DC motors, two LEDs, and a 9V battery. The Arduino is connected to the Bluetooth module via TXD, RXD, and GND pins. The Bluetooth module is connected to the L293D driver's IN1, IN2, and GND pins. The L293D driver's VCC and GND pins are connected to the 9V battery. The two DC motors are connected to the L293D driver's OUT1, OUT2, OUT3, and OUT4 pins. The two LEDs are connected to the L293D driver's OUT1 and OUT2 pins. The 9V battery is connected to the L293D driver's VCC and GND pins.



How it works-

- As we know, when the Accelerometer in the (Master) breadboard sense the body in which direction it is moving, it sends data to Arduino.
- In turn, it configures and sends a signal to the (Slave) breadboard Arduino via the Bluetooth devices connected to both boards.
- After, receiving the signal, the Slave Arduino computes the data in which direction it is moving sent by Master Arduino and it communicates with (or glows) the LED strip of the Slave Arduino's data.

Output:-

The screenshot displays the Arduino IDE 2.0.0 environment. The top menu bar includes File, Edit, Sketch, Tools, and Help. Below the menu, the board is set to 'Arduino Nano'. The main editor area contains a C++ sketch with the following code:

```
60 // END of Trinket-specific code.
61
62 strip_back.begin();           // INITIALIZE NeoPixel strip_back object (REQUIRED)
63 strip_back.show();            // Turn OFF all pixels ASAP
64 strip_back.setBrightness(150); // Set BRIGHTNESS to about 1/5 (max = 255)
65
66 strip_left.begin();           // INITIALIZE NeoPixel strip_back object (REQUIRED)
67 strip_left.show();            // Turn OFF all pixels ASAP
68 strip_left.setBrightness(150); // Set BRIGHTNESS to about 1/5 (max = 255)
69
70 strip_right.begin();          // INITIALIZE NeoPixel strip_back object (REQUIRED)
71 strip_right.show();           // Turn OFF all pixels ASAP
72 strip_right.setBrightness(150); // Set BRIGHTNESS to about 1/5 (max = 255)
```

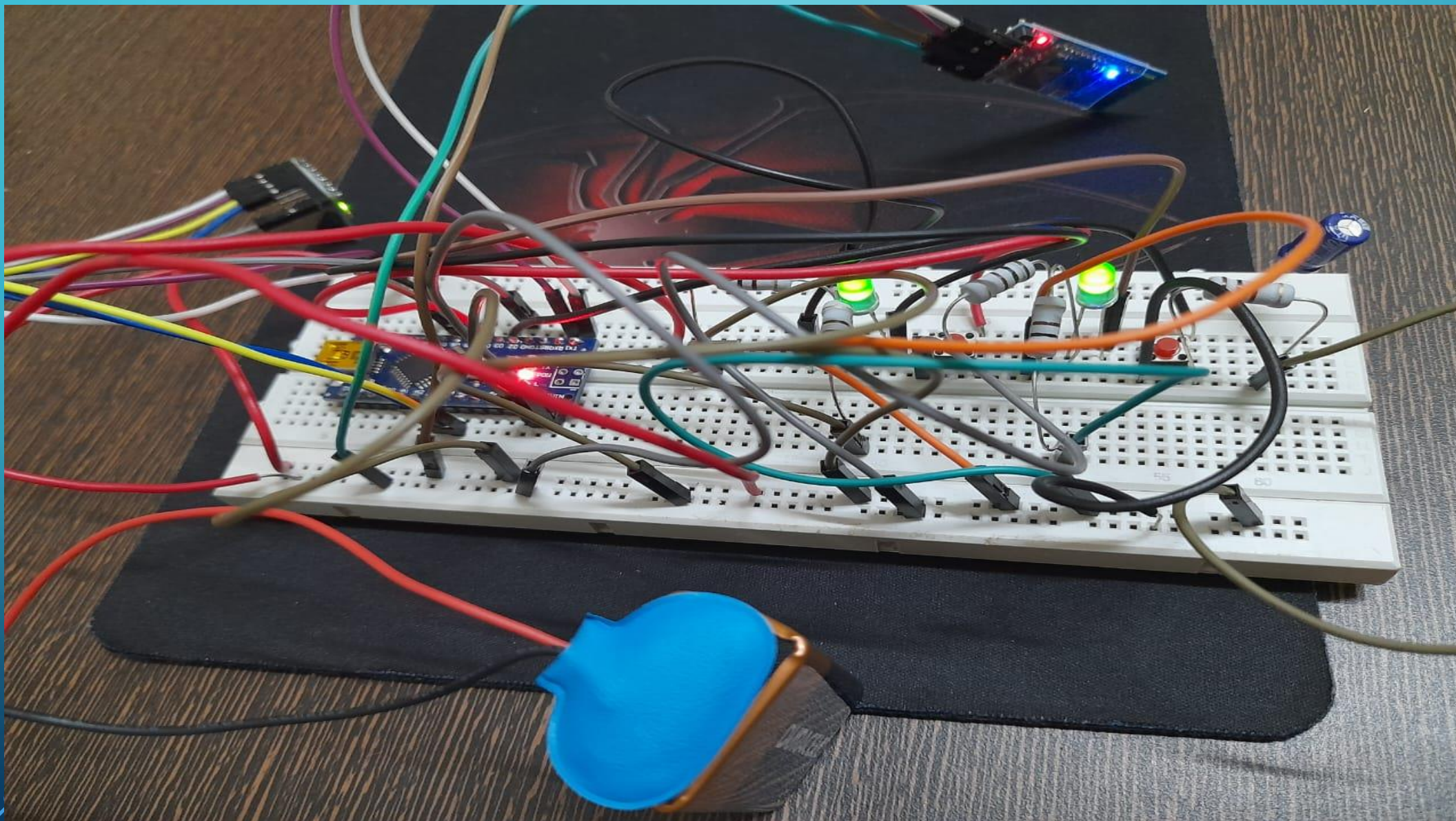
The Serial Monitor window is open, showing the output of the sketch. The message input field at the top of the monitor contains the text: "Message (Ctrl + Enter to send message to 'Arduino Nano' on 'COM3')". The output text is as follows:

```
K
R Offset centre
R
L OfR
L Offset centrL OR
R Offset centrR
L Offset centre
L OR
LL
L Offset centrL OR OR Offset centre
L
L Offset centre
L
L OfL Offset centrL OR
R
L Offset centrL OR
R Offset centrR
L OfL Offset centrR
R OR
L
- - - - -
```

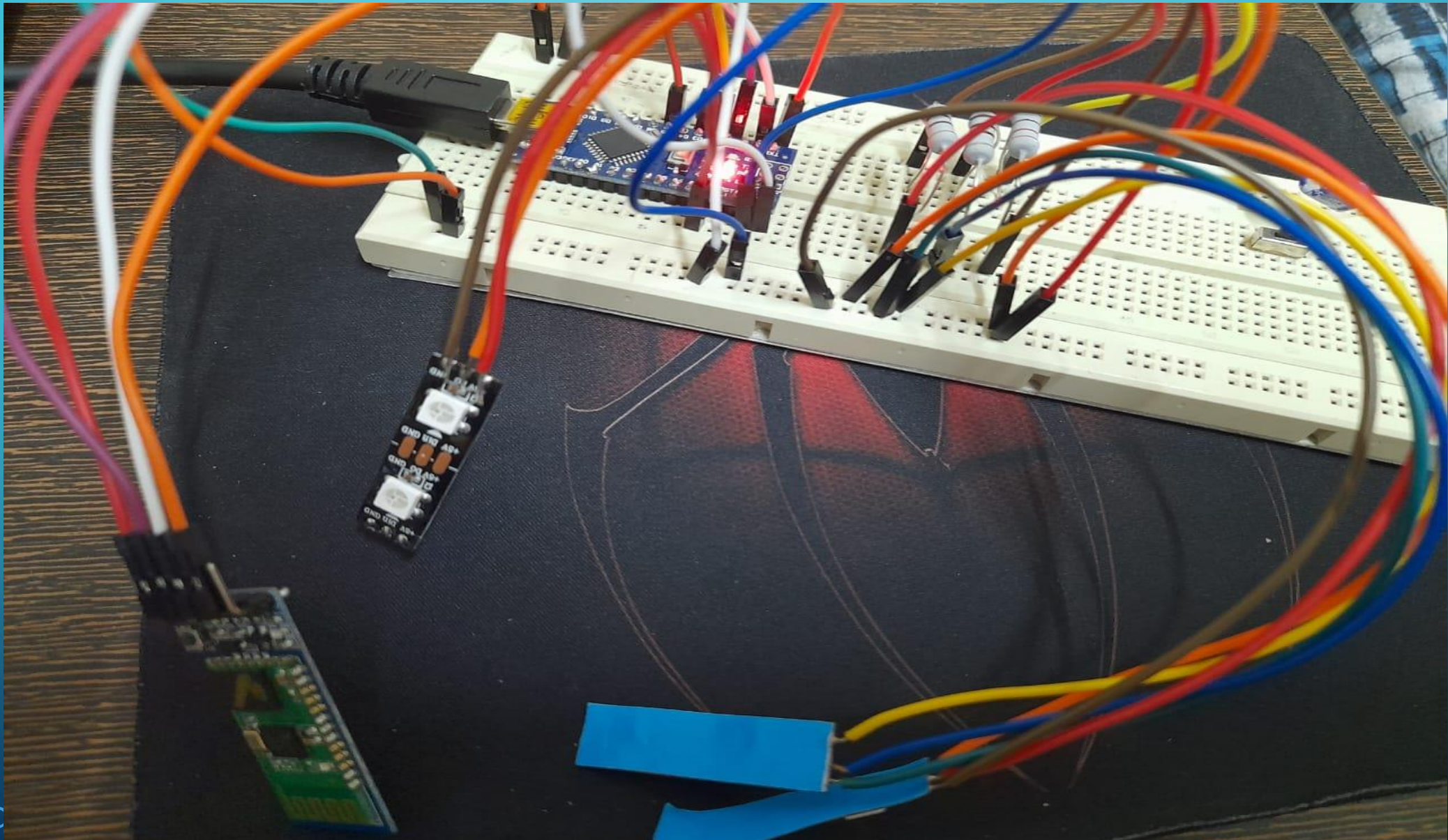
The status bar at the bottom of the IDE indicates the current position is 'Ln 317, Col 35', the encoding is 'UTF-8', and the board is 'Arduino Nano on COM3'. The Windows taskbar at the very bottom shows the system clock as 6:56 PM on 21-Oct-22, along with weather information (27°C Haze) and various application icons.

Prototype:-

Handle circuit:-



Vest circuit:-



What we have done in this review:-

To Configure and Pair Two HC-05 As Master and Slave:-

- To configure HC-05, we will have to enter AT mode
- From the diagram, the VCC of HC-05 is connected to the 3.3V of the Arduino Nano. If the VCC of HC-05 is connected directly to 5V of Arduino Nano,
- Next, remove the VCC wire, and connect the USB to the Arduino board.
- Type the sample source code and upload it to your Arduino board.
- After the uploading process is complete, then reconnect the VCC wire back to your HC-05.
- Now we can see the LED on the HC-05 Bluetooth is blinking every 2 seconds at interval. This indicates that the Bluetooth module has entered AT mode.

Slave Configuration(Handle):

- The required AT commands to set the configuration
- `AT+RMAAD` (To clear any paired devices)
- `AT+ROLE=0` (To set it as slave)
- `AT+ADDR` (To get the address of this HC-05, remember to jot the address down as it will be used during master configuration)
- `AT+UART=9600,0,0` (To fix the baud rate at 9600)

Master Configuration(Vest):

The required AT commands to set the configuration:

- `AT+RMAAD` (To clear any paired devices)
- `AT+ROLE=1` (To set it as master)
- `AT+CMODE=0` (To connect the module to the specified Bluetooth address and this Bluetooth address can be specified by the binding command)
- `AT+BIND=xxxx,xx,xxxxxx` (`AT+BIND=98d3,34,906554`)
- `AT+UART=9600,0,0`

In the next review-

We will try to implement the PCB design and attach the vest circuit and led strips to the vest and handle circuit to the bicycle handle.

The background is a blue gradient with faint concentric circles. White circuit-like lines with circular nodes are positioned in the corners: top-left, top-right, bottom-left, and bottom-right.

Thank You