**Haptic Suit**

# Contents

1. **Software ……………………………………………………………..……………………2-6**

1.0 Flow chart ………………………………………………………………………2-3

1.1 function definition…………………………………………………………..4-6

1.2 Release Program ……………………………………………………………6

1. **Debugging Guide………………………………………………………………………….7-8**
2. **Software references………………………………………………………………………9**

**2. Software**

**2.1 Flow Chart**

Declare all the global Variables to Hold time and Switch status and also declare the pin for switch

Define the functions for the switch

**1.1 Function Definition**

1. Initialize the char and string variable to receive data from the serial monitor and another variable for the vibrator

**char rx\_byte = 0;**

**String rx\_str = "";**

**int vibrator = 0;**

1. Initialize the variable to hold time and button count and button state.

Declare the pin for button

**unsigned long keyPrevMillis = 0;**

**const unsigned long keySampleIntervalMs = 20;**

**byte longKeyPressCountMax = 50;**

**byte longKeyPressCount = 0;**

**byte prevKeyState = LOW;**

**const byte PanicPin = 2 ,int Panic\_confirm;**

1. This function is used to know the status of button is pressed/hold for 1 second

**void longKeyPress() {**

**// Serial.println("long");**

**Serial.println("1");**

**Panic\_confirm = 1;**

**}**

1. This function will button count in 1 second

**void keyPress() {**

**longKeyPressCount = 0;**

**}**

1. This function will give whether the button is pressed or not

**void keyRelease() {**

**if (longKeyPressCount >= longKeyPressCountMax) {**

**longKeyPress();}}**

1. Set the UART communication with baud rate settings and also make button as input and all vibrator motors as output
2. Declare Switch Pins as OUTPUT and Led Pins as INPUT

**Serial.begin(9600); pinMode(2, INPUT)**

**pinMode(A0, OUTPUT), pinMode(3, OUTPUT);**

**pinMode(4, OUTPUT), pinMode(5, OUTPUT);**

**pinMode(6, OUTPUT), pinMode(7, OUTPUT);**

**pinMode(8, OUTPUT), pinMode(9, OUTPUT);**

**pinMode(10, OUTPUT);pinMode(11, OUTPUT);**

1. Initially Make the vibrator motors in off state

**digitalWrite(A0, LOW);digitalWrite(3, LOW);**

**digitalWrite(4, LOW);digitalWrite(5, LOW);**

**digitalWrite(6, LOW);digitalWrite(7, LOW);**

**digitalWrite(8, LOW);digitalWrite(9, LOW);**

**digitalWrite(10, LOW);digitalWrite(11, LOW);**

1. This function will give the switch pressed or not and long press count

**if (millis() - keyPrevMillis >= keySampleIntervalMs) {**

**keyPrevMillis = millis();**

**byte currKeyState = digitalRead(PanicPin);**

**if ((prevKeyState == LOW) && (currKeyState == HIGH)) {**

**keyPress();**

**}**

**else if ((prevKeyState == HIGH) && (currKeyState == LOW)) {**

**keyRelease();**

**}**

**else if (currKeyState == HIGH) {**

**longKeyPressCount++;**

**}**

**prevKeyState = currKeyState; }**

1. This function is used to confirm the switch is hold for 1 second

**if (Panic\_confirm == 1){**

**if (digitalRead(2) == HIGH)**

**{**

**delay(10);**

**Serial.println("ok");**

**Panic\_confirm = 0;}}**

**else**

**{**

**Serial.println("0");**

**}**

1. This function is used to receive the data from the serial monitor or game pc

**if (Serial.available() > 0)**

**{**

**rx\_byte = Serial.read();**

**if (rx\_byte != '\n') {**

**rx\_str += rx\_byte; }**

**else {**

**vibrator = rx\_str.toInt();**

**rx\_str = ""; } }**

1. This functions are used to turn on all the motors

**if (vibrator == 1)**

**{**

**vibrator\_on(3);**

**}**

**if (vibrator == 2)**

**{**

**vibrator\_on(4);**

**}**

**if (vibrator == 3)**

**{**

**vibrator\_on(5);**

**}**

**if (vibrator == 4)**

**{**

**vibrator\_on(7);**

**}**

**if (vibrator == 5)**

**{**

**vibrator\_on(6);**

**}**

**if (vibrator == 6)**

**{**

**vibrator\_on(8);**

**}**

**if (vibrator == 7)**

**{**

**vibrator\_on(9);**

**}**

**if (vibrator == 8)**

**{**

**vibrator\_on(10);**

**}**

**if (vibrator == 9)**

**{**

**vibrator\_on(11);**

**}**

**if (vibrator == 10)**

**{**

**vibrator\_on(A0);**

**}**

**if (vibrator == 11)**

**{**

**vibrate\_all(3, 4, 5, 6, 7, 8, 9, 10, 11, A0 );**

**}**

**if (vibrator == 12)**

**{**

**vibrate\_off(3, 4, 5, 6, 7, 8, 9, 10, 11, A0 );**

**}**

**vibrator = 0;**

1. This function is used to turn on all the motors

**void vibrate\_all(int n1, int n2, int n3, int n4, int n5, int n6, int n7, int n8, int n9, int n10 )**

**{**

**digitalWrite(n1, HIGH);**

**digitalWrite(n2, HIGH);**

**digitalWrite(n3, HIGH);**

**digitalWrite(n4, HIGH);**

**digitalWrite(n5, HIGH);**

**digitalWrite(n6, HIGH);**

**digitalWrite(n7, HIGH);**

**digitalWrite(n8, HIGH);**

**digitalWrite(n9, HIGH);**

**digitalWrite(n10, HIGH);**

**}**

1. This function is used to turn off all the motors

**void vibrate\_off(int n1, int n2, int n3, int n4, int n5, int n6, int n7, int n8, int n9, int n10 )**

**{**

**digitalWrite(n1, LOW);**

**digitalWrite(n2, LOW);**

**digitalWrite(n3, LOW);**

**digitalWrite(n4, LOW);**

**digitalWrite(n5, LOW);**

**digitalWrite(n6, LOW);**

**digitalWrite(n7, LOW);**

**digitalWrite(n8, LOW);**

**digitalWrite(n9, LOW);**

**digitalWrite(n10, LOW);**

**}**

1. This function is used to turn on one motor at a time

**void vibrator\_on(int pinnumber)**

**{**

**digitalWrite(3, LOW);**

**digitalWrite(4, LOW);**

**digitalWrite(5, LOW);**

**digitalWrite(6, LOW);**

**digitalWrite(7, LOW);**

**digitalWrite(8, LOW);**

**digitalWrite(9, LOW);**

**digitalWrite(10, LOW);**

**digitalWrite(11, LOW);**

**digitalWrite(A0, LOW);**

**digitalWrite(pinnumber, HIGH);**

**delay(500);**

**digitalWrite(pinnumber, LOW);}**

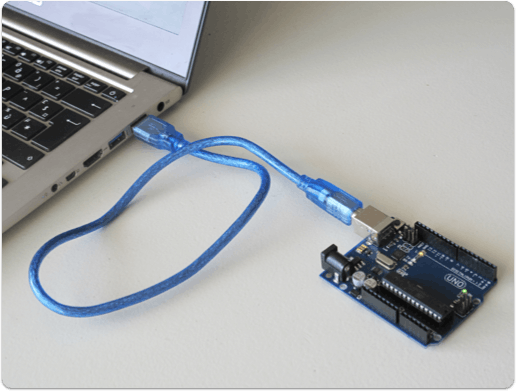
**1.2Release Program**

[**https://github.com/KRUPALATHA/Hapticsuit**](https://github.com/KRUPALATHA/Hapticsuit)

**2. Debugging Guide**

**Step 1:**

Connect the Arduino Nano Board to the CPU through the USB2.0 cable. You can’t find the Com port when the Arduino board is not working



**Step 2:**

Open the Arduino IDE and select the comport, open the serial monitor, and select the baud rate (9600) and verify the data

**Step 3:**

Initially, the microcontroller will be sending value like 0 ( panic button), if you Press the panic button for 1 second you will get “1” on serial monitor and after pressing the panic button for 1 second then for confirmation should press the switch for one time then you will get the value like “2”

**Step 4:**

If switch is not sending any values after following the above step check the hardware connection of the switch and check the switch working status through the arduino switch program

**Step5:**

Open the arduino switch program and flash the code in the controller and check the switch data is changing from one state to another state (i.e. 0 to 1).if switch is working means then flash the haptic suit code and check the full game

**Step6:**

To turn on the vibrator motor we need to receive the data from the game pc or serial monitor. If you receive “1” from the serial monitor the first vibrator will turn on for 500 ms then it will stop .like that we need to receive 1 to 10 numbers from the game pc or serial monitor to turn on and off the vibrator motor.

To turn on all the vibrator motors at a time we need to send 11 to the Microcontroller and to turn off all the vibrators at a time we need to send 12 to the Microcontroller

**Step 7:**

If the particular vibrator not vibrating for the receive input number then check the vibrator motor connections and follow the above steps .if still not working means replace with new vibrator motor

**3. Software references**

[**https://www.precisionmicrodrives.com/content/how-to-drive-a-vibration-motor-with-arduino-and-genuino/**](https://www.precisionmicrodrives.com/content/how-to-drive-a-vibration-motor-with-arduino-and-genuino/)

**//vibrator motor with arduino**

[**https://www.arduino.cc/en/tutorial/pushbutton**](https://www.arduino.cc/en/tutorial/pushbutton)

**//push button with arduino**