Dayananda Sagar Institutions

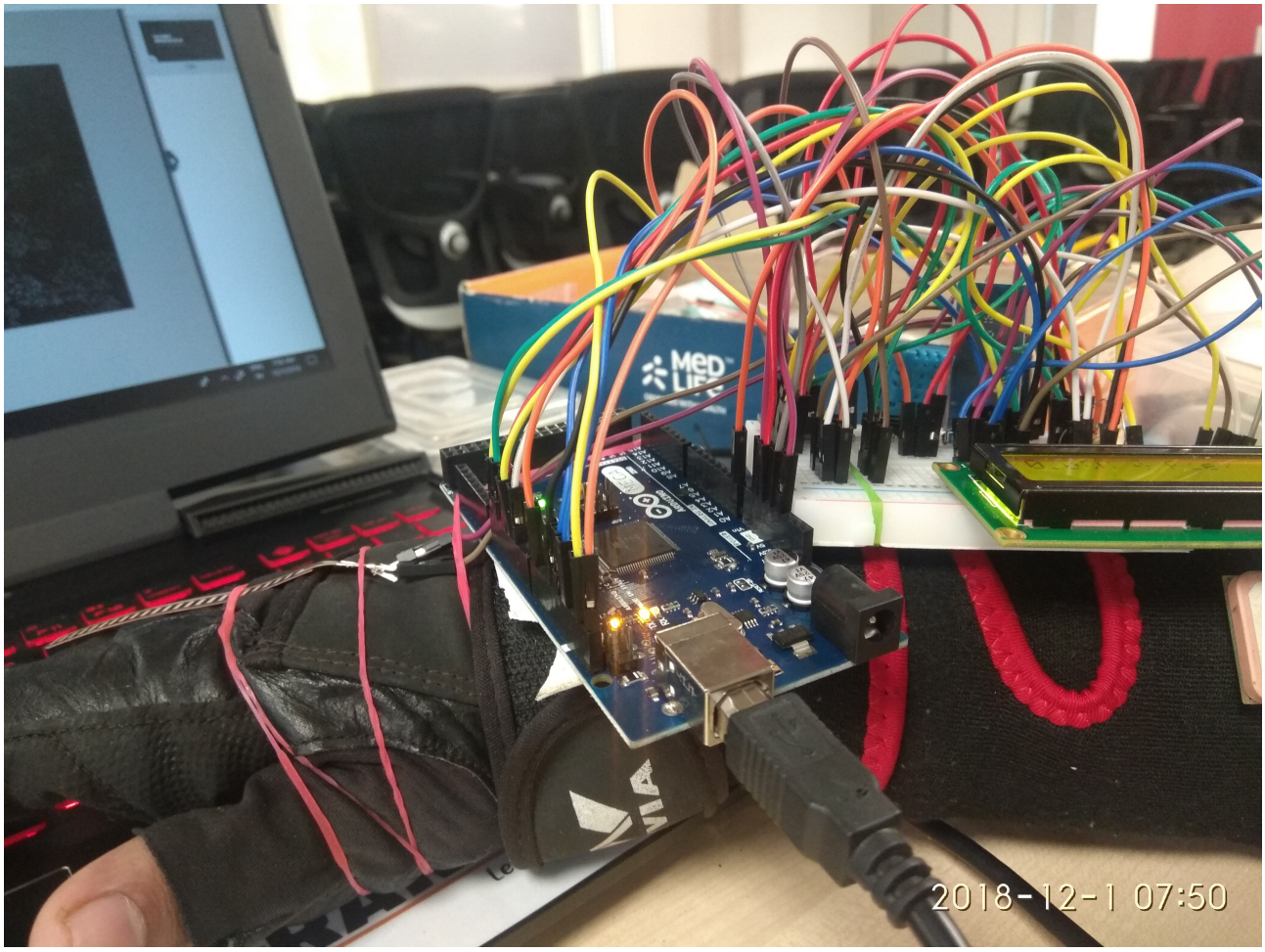
Rakathon 2018

PERFORMANCE REPORT

ASHUTOSH PANDEY

TEAM ID P268

30/11/2018-1/12/2018



Programme Name	Rakuten 'Rakathon' 2018		
Project Sponsor	Rakuten India		
Participant	Ashutosh Pandey, CSE 3A, 1DS17CS026.		
Start Date	30th November 2018	**Completion Date**	1st December 2018

PART 1: ABOUT THE HACKATHON

ABOUT THE COMPANY

Rakuten, Inc. (楽天株式会社 Rakuten Kabushiki-gaisha) is a Japanese electronic commerce and Internet company based in Tokyo and founded in 1997 by Hiroshi Mikitani. Its B2B2C e-commerce platform Rakuten Ichiba is the largest e-commerce site in Japan and among the world's largest by sales.

The company operates Japan's biggest Internet bank and number 1 credit card company (by transaction value). It also offers e-commerce, fintech, digital content and communications services to over 1 billion members around the world, and operates in 29 countries and regions. It is often referred to as "the Amazon of Japan".

In 2005, Rakuten started expanding outside Japan, mainly through acquisitions and joint ventures. Its major acquisitions include Buy.com (now Rakuten.com in the US), PriceMinister (France), Ikeda (now Rakuten Brasil), Tradoria (now Rakuten Deutschland), Play.com (now Rakuten.co.uk in the UK), Wuaki.tv (now Rakuten TV in Spain), Kobo Inc. (now Rakuten Kobo in Canada), Viber (now Rakuten Viber), Ebates, Viki (now Rakuten Viki), OverDrive, Inc. (now Rakuten OverDrive), Slice (now Rakuten Slice) and The Grommet.

The company also has an online marketing business, Rakuten Marketing, and has investments in companies such as Pinterest, Ozon.ru, AHA Life, Lyft, Cabify, Careem, Carousell and Acorns.

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RAKATHON

2021 Individuals from professors, to students from 26 different regions from India registered for 1529 teams. The team size allowed was 1-4. The participants were required to submit an idea online on the hacker earth portal first, based on which teams were shortlisted. Finally, 85 teams were shortlisted (280 participants).

I received the Jury's choice award at the hackathon, which is a special award given to those who the jury thinks had unique ideas. I was the youngest student at the event, being in my second year of engineering, to get shortlisted and to win an award. The details of what I built along with the complete schematics are outlined below.

IDEA

Workouts are becoming ubiquitous in today's lifestyle. Everyone wants to workout and build their health.

Fitness bands do exist but they track only the basic essentials, number of steps walked, heartbeat etc. I want to build a workout glove that's tailored towards most common Gym exercises and has different 'modes' for different workouts such as Bench Press, Dumbbell flyes, squats etc.

How? The Arduino Lilypad is tailored towards smart wearable and can be sewed into clothing and even be washed. I want to use the Arduino Lilypad as the brain of my interface along with an array of Accelerometers,force sensors gyroscopes and heart rate and temperature sensors.

Because every exercise has a fixed range of motion (people move only a certain way) we can track the average users movements and use it to count 'reps' of an exercise. And the device can tell how many reps have been completed and if they have been done for the full range of motion (for example: not a half squat).

We can use algorithms that can adapt with a users workout to be tailor made to each exercise.

TECHNOLOGY STACK

1.) Arduino Mega, DH11, HC05, IMU6050, Neo 6m, Flex resistor, 16x2 LCD.

2.) NI LabView 2013 with NI Visa.

3.) Arduino IDE

4.) U-Central 'U-blox' software.

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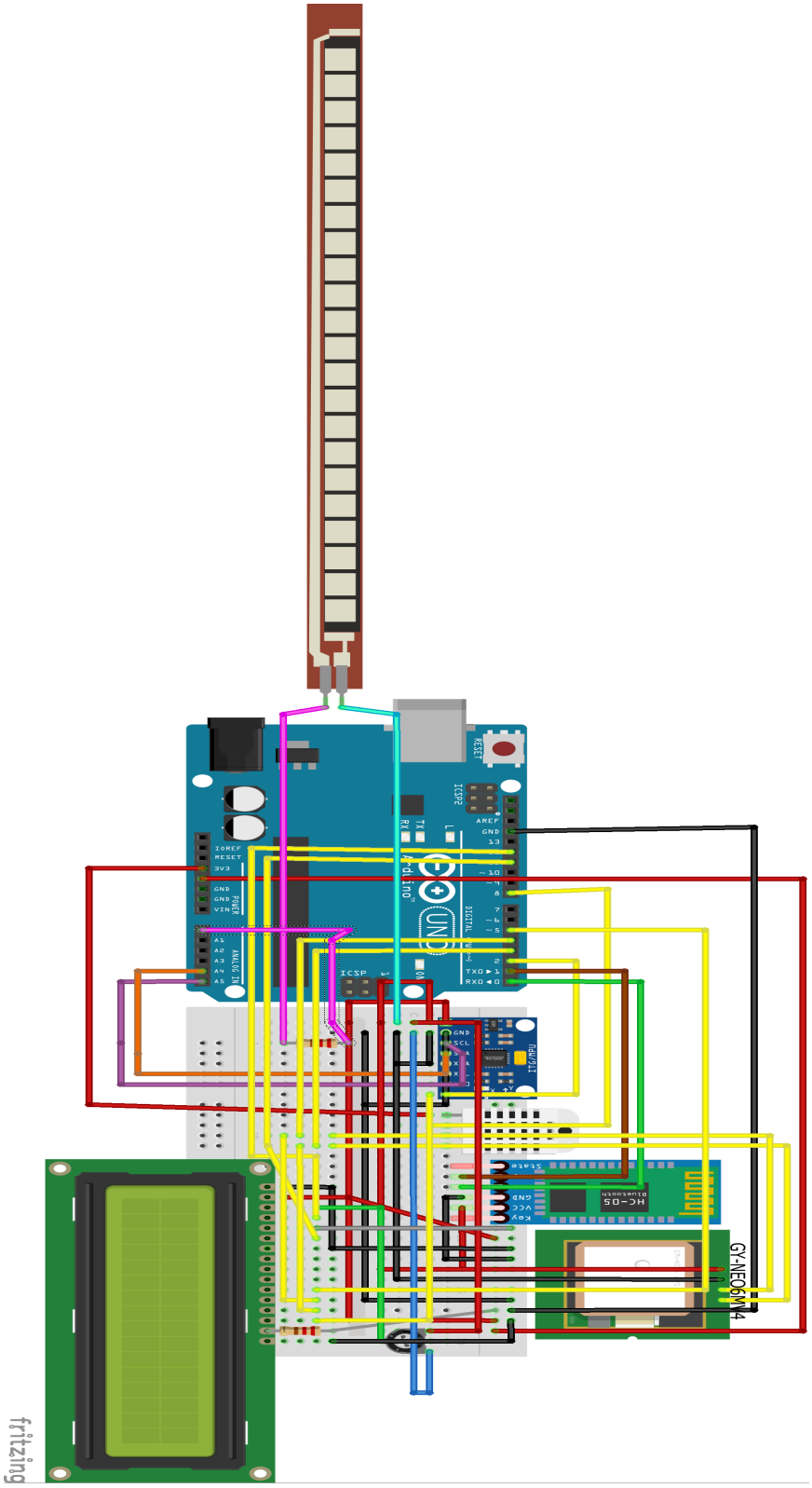
CIRCUIT DIAGRAM



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CODE DOCUMENTATION

```
#include<Wire.h>

#include<dht.h>

#include <LiquidCrystal.h>

#include <SoftwareSerial.h>

dht DHT;

const int rs = 12, en = 11, d4 = 5, d5 = 4, d6 = 3, d7 = 2;

LiquidCrystal lcd(rs, en, d4, d5, d6, d7);

int flexSensorPin = A0; //analog pin 0

#define DHT11_PIN 8

const int MPU6050_addr=0x68;

int16_t AccX,AccY,AccZ,Temp,GyroX,GyroY,GyroZ;

void setup(){

 Serial.begin(9600);

   lcd.begin(16, 2);

 Wire.begin();

 Wire.beginTransmission(MPU6050_addr);

 Wire.write(0x6B);

 Wire.write(0);

 Wire.endTransmission(true);

}

void loop(){

 int flexSensorReading = analogRead(flexSensorPin);

int flex0to100 = map(flexSensorReading, 240, 350, 0, 100);

Serial.println("Flex Reading");

Serial.println(flex0to100);

delay(700); //just here to slow down the output for easier reading
```


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```
 int chk = DHT.read11(DHT11_PIN);


Serial.println(" Humidity " );


Serial.println(DHT.humidity, 1);
 lcd.setCursor(0, 0);
lcd.print(DHT.humidity, 1);
lcd.print("%H");
lcd.print(" ");
Serial.println(" Temperature ");
lcd.print(DHT.temperature, 1);
lcd.print("degC");
delay(1000);
 Wire.beginTransmission(MPU6050_addr);
 Wire.write(0x3B);
 Wire.endTransmission(false);
 Wire.requestFrom(MPU6050_addr,14,true);
 AccX=Wire.read()<<8|Wire.read();
 AccY=Wire.read()<<8|Wire.read();
 AccZ=Wire.read()<<8|Wire.read();
 Temp=Wire.read()<<8|Wire.read();
 GyroX=Wire.read()<<8|Wire.read();
 GyroY=Wire.read()<<8|Wire.read();
 GyroZ=Wire.read()<<8|Wire.read();
 lcd.setCursor(0, 1);
 Serial.print("AccX = "); Serial.print(AccX);
 Serial.print(" || AccY = "); Serial.print(AccY);
```


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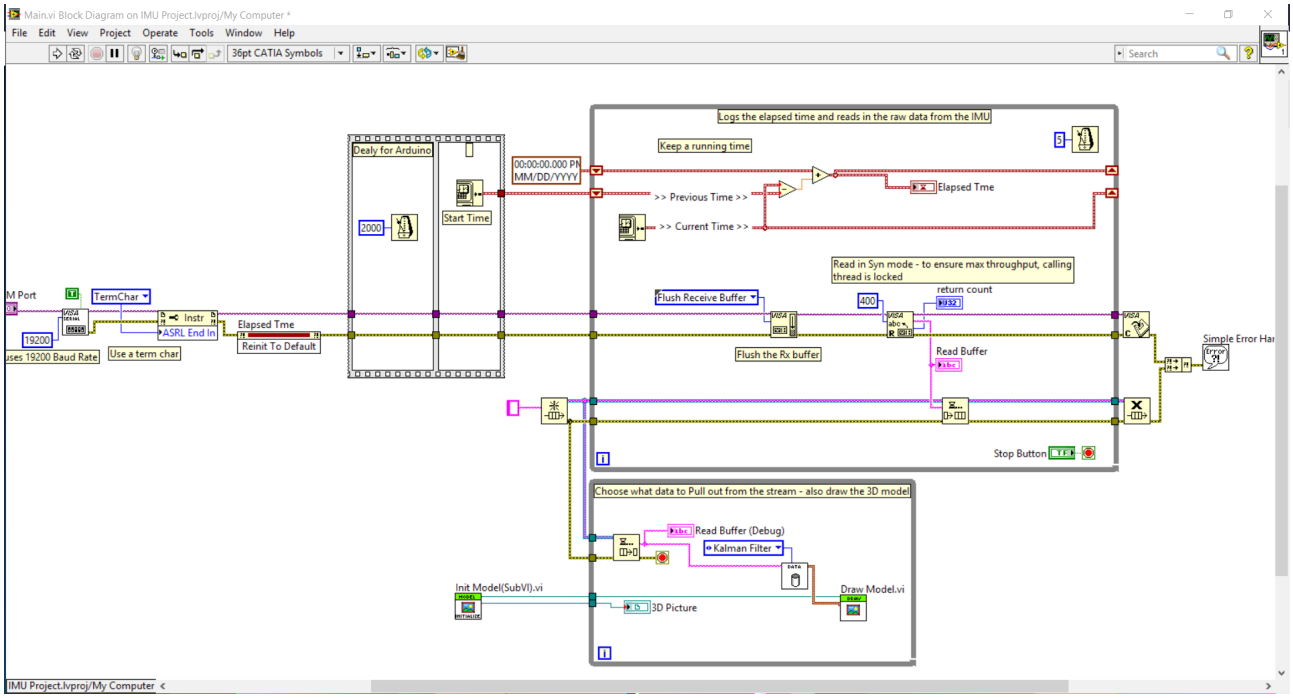
```
Serial.print(" || AccZ = "); Serial.print(AccZ);
Serial.print(" || Temp = "); Serial.print(Temp/340.00+36.53);
Serial.print(" || GyroX = "); Serial.print(GyroX);
Serial.print(" || GyroY = "); Serial.print(GyroY);
Serial.print(" || GyroZ = "); Serial.println(GyroZ);
lcd.print(AccX);
lcd.print(" ");
lcd.print(AccY);
lcd.print(" ");
lcd.print(AccZ); delay(800);
}
```

LABVIEW GUI AND VI

The GUI for the software was made in Labview, the images of the VI and GUI are given below.



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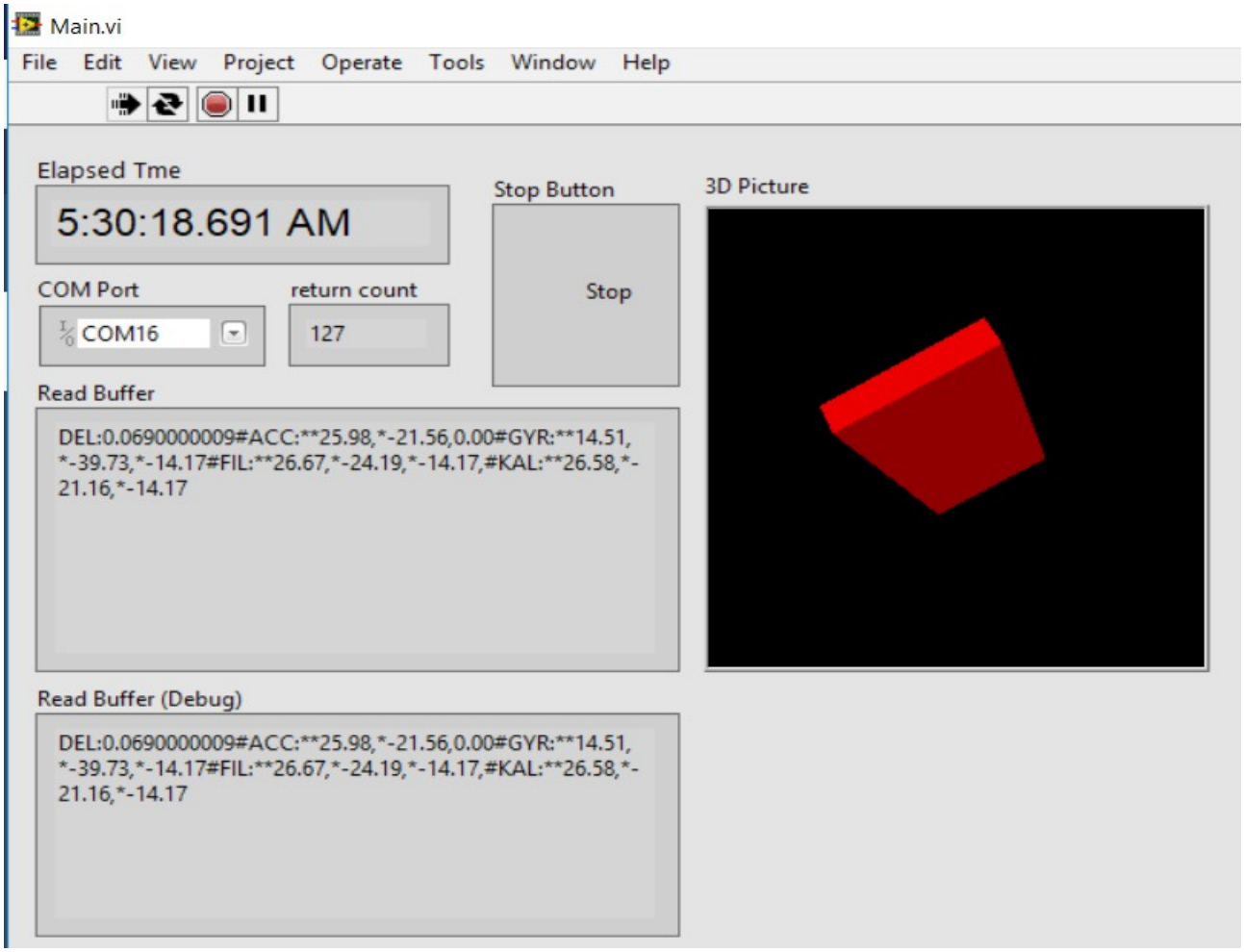

COM16 (Arduino/Genuino Mega or Mega 2560)

```
 Temperature
AccX = 1348 || AccY = 1652 || AccZ = 15128 || Temp = 28.86 || GyroX = -795 || GyroY = 689 || GyroZ = -184
Flex Reading
12
 Humidity
66.0
 Temperature
AccX = -7380 || AccY = 1504 || AccZ = 13716 || Temp = 30.65 || GyroX = -398 || GyroY = 784 || GyroZ = -4
Flex Reading
14
 Humidity
66.0
 Temperature
AccX = 10740 || AccY = -1000 || AccZ = 11472 || Temp = 29.24 || GyroX = -428 || GyroY = -646 || GyroZ = 334
Flex Reading
10
 Humidity
65.0
 Temperature
AccX = 8664 || AccY = -688 || AccZ = 13272 || Temp = 28.86 || GyroX = -263 || GyroY = -61 || GyroZ = 336
```


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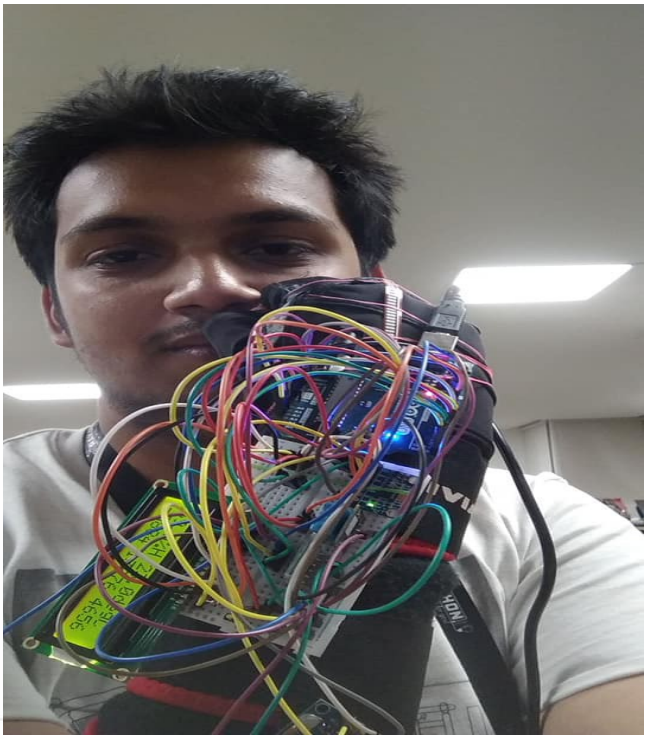
RESULTS

I received the Jury's choice award from Yasufumi Hirai, The CIO of Rakuten Inc, Japan. The prize was a JBL Flip 3 speaker worth Rs 10,000. The company also tweeted about me on their official twitter handle.



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