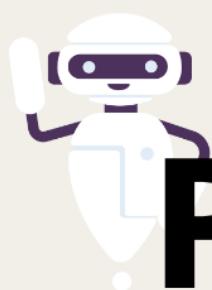


SENARC



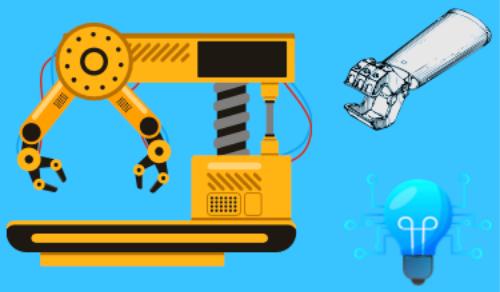
Pioneers

2024

SUSHANTH, ROHAN

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PROJECT STATUS REPORT



Project Name	Automated Robotic-Arm	Reporting Period
Project Owner	Sushanth Kesamreddy Rohan Dobriyal	25/08/2023 - 03/10/2023
Prepared by	TensenTech	

PROBLEM STATEMENT

- With e-commerce companies using complex automation systems to scale for customer demand, there are still multiple areas that require human intervention. Sortation is a huge problem statement for all e-commerce companies. To ensure packages reach over 19,000 pincodes in India, massive automation systems are employed by all companies. However one area that still faces challenges is essentially the act of "Automated Singulation".

OBJECTIVE

This competition aims to test the following capabilities of contestants .

- Ability to detect individual packages from a group of packages
- Pick a package from that group and drop it in the Drop-Zone
- Shipment barcode should be present on top when dropped in the Drop-Zone

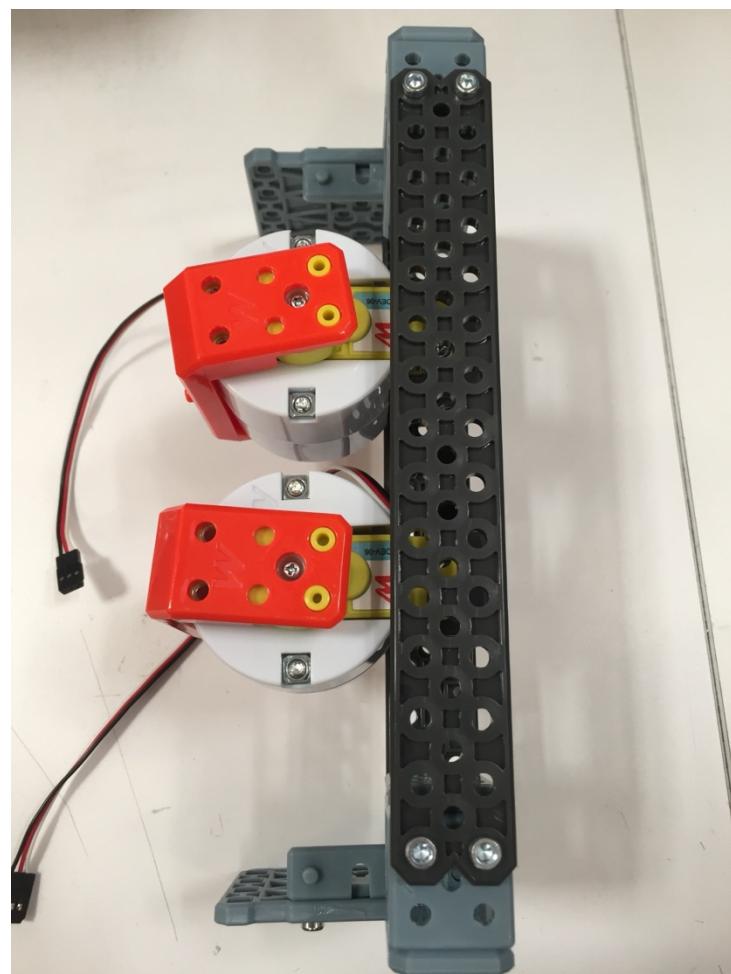
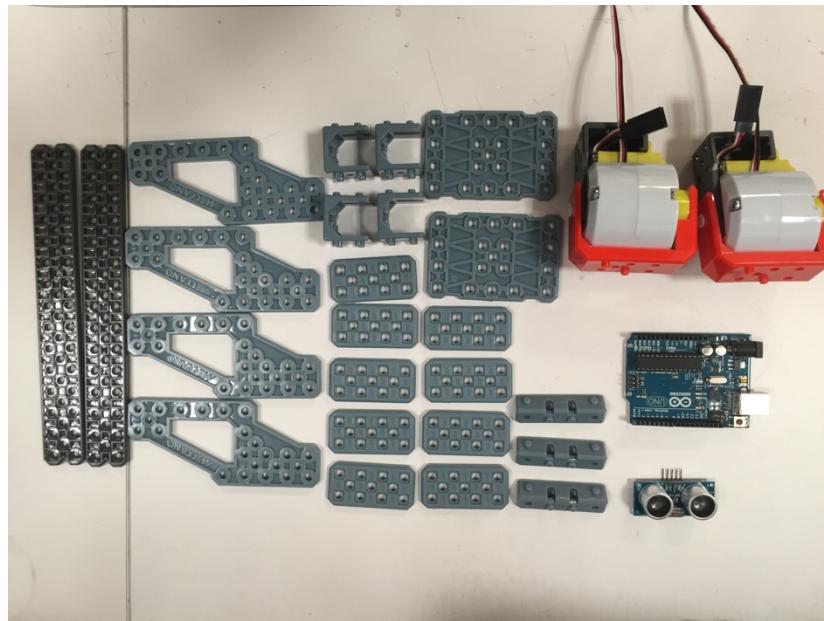
BUDGET

PARTS	PRICE	UNITS
SERVO MOTORS	1800	6
Servo Driver,PCA9685	600/-	1
Battery Pack	1000/-est.(10pcs)	10
Arduino HC-05	400/-	2

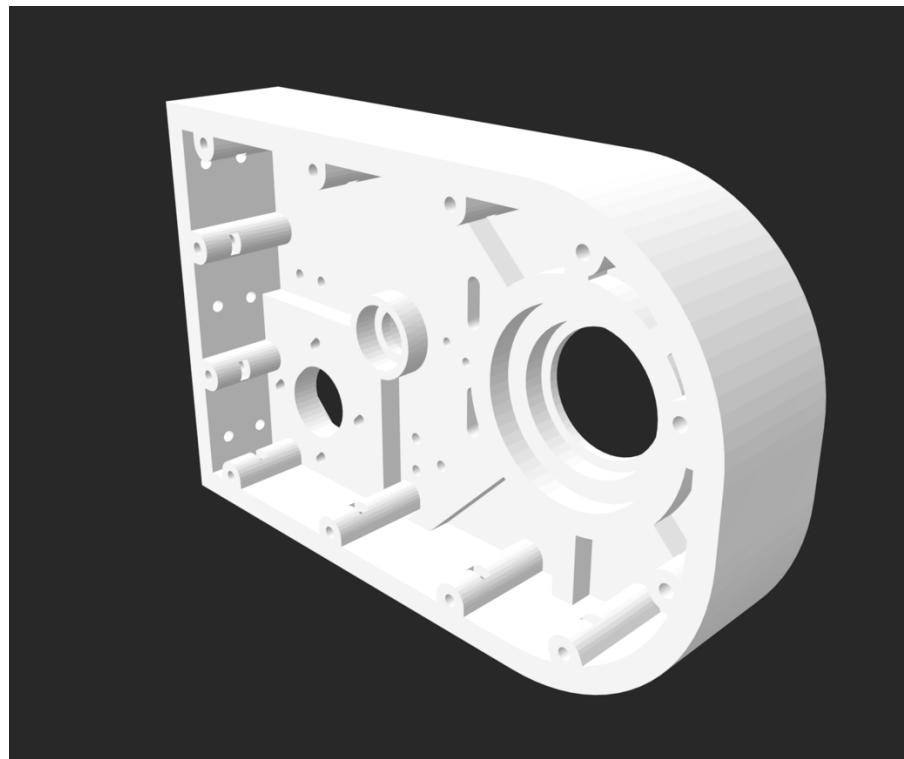
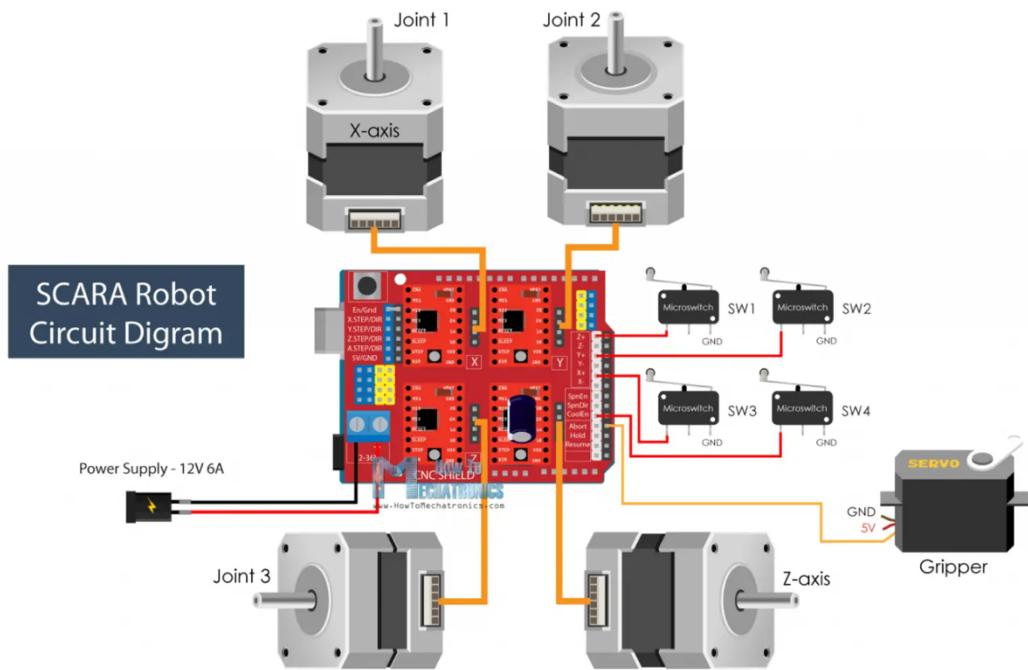
Arduino KIT	1700/-	1
NEMA 17 Stepper Motor	800/-	1
A4988 Stepper Motor Driver	300/-	1
Flex Sensor	1500/-	3
MPU6050 (Accelerometer)	300/-	1
Arduino Nano	550/-	1
Capacitor (100nF)	100/-	1
3D Printed Parts	3000/-	-
TOTAL	12,500	29

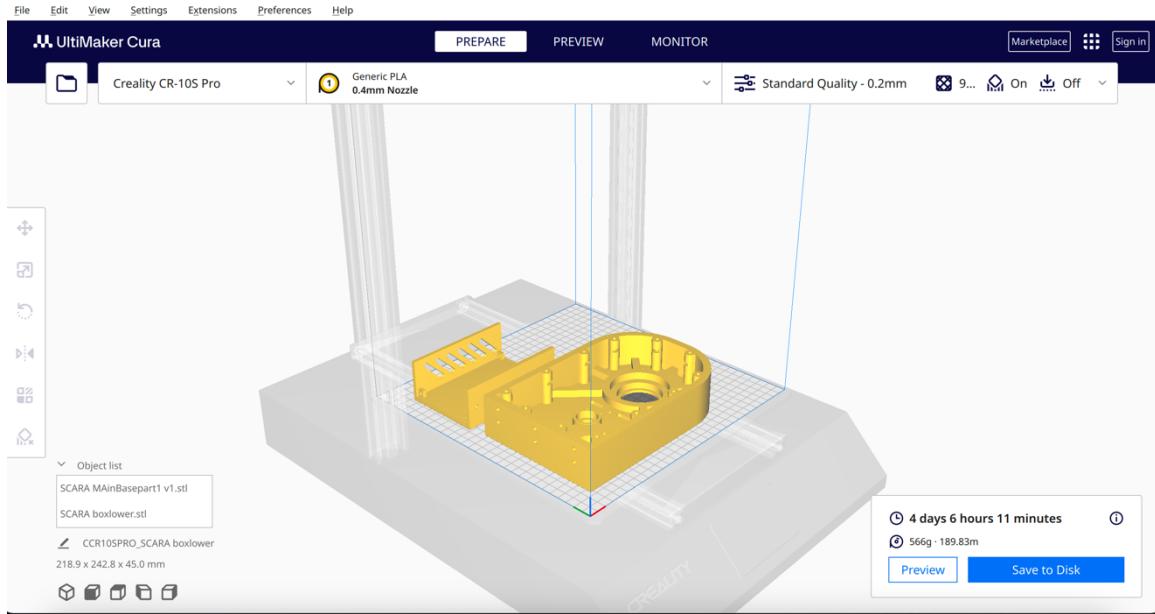
Pending Issues

- Assembly
- Coding
- Synchronisation
- Error Correction



3





```
#ifndef MeccaBrain_h
```

```
#define MeccaBrain_h
```

```
#include <Arduino.h>
```

```
class MeccaBrain {
```

```
public:
```

```
    MeccaBrain(int pin);
```

```
    byte outputByteInfo(int num);
```

```
    byte inputByteInfo();
```

```
    byte inputBytesInfo(int servoNum);
```

```
    byte checkSumByteInfo();
```

```
byte servoPositionsInfo(int servoNum);

char moduleTypeInfo(int num);

byte moduleNumInfo();

byte getLEDorder();

byte getLEDbyte1();

byte getLEDbyte2();

void setLEDColor(byte red, byte green, byte blue, byte fadetime);

void setServoColor(int servoNum, byte color);

void setServoPosition(int servoNum, byte pos);

void setServoToLIM(int servoNum);

byte getServoPosition(int servoNum);

void communicate();

void sendByte(byte servoData);

byte receiveByte();

byte calculateCheckSum(byte Data1, byte Data2, byte Data3, byte Data4);

private:

int _pmwPin;

int servoNumber;

int inputCounter = 0;
```

```
int moduleNum = 0;  
int printModNum = 0;  
int ledOrder = 0;  
int bitDelay = 417;  
int receiveArray[8];  
  
byte inputByte;  
byte inputBytes[8];  
byte checkSum;  
byte servoPos;  
byte LEDoutputByte1 = 0x00;  
byte LEDoutputByte2 = 0x47;  
byte header = 0xFF;  
byte outputByte[4];  
byte printOutputByte[4];  
  
char moduleType[4];  
int servo1Positions[9];  
int servo2Positions[10];  
int servo3Positions[11];  
int servo4Positions[12];  
};
```

```
#include "Arduino.h"
#include "MeccaBrain.h"

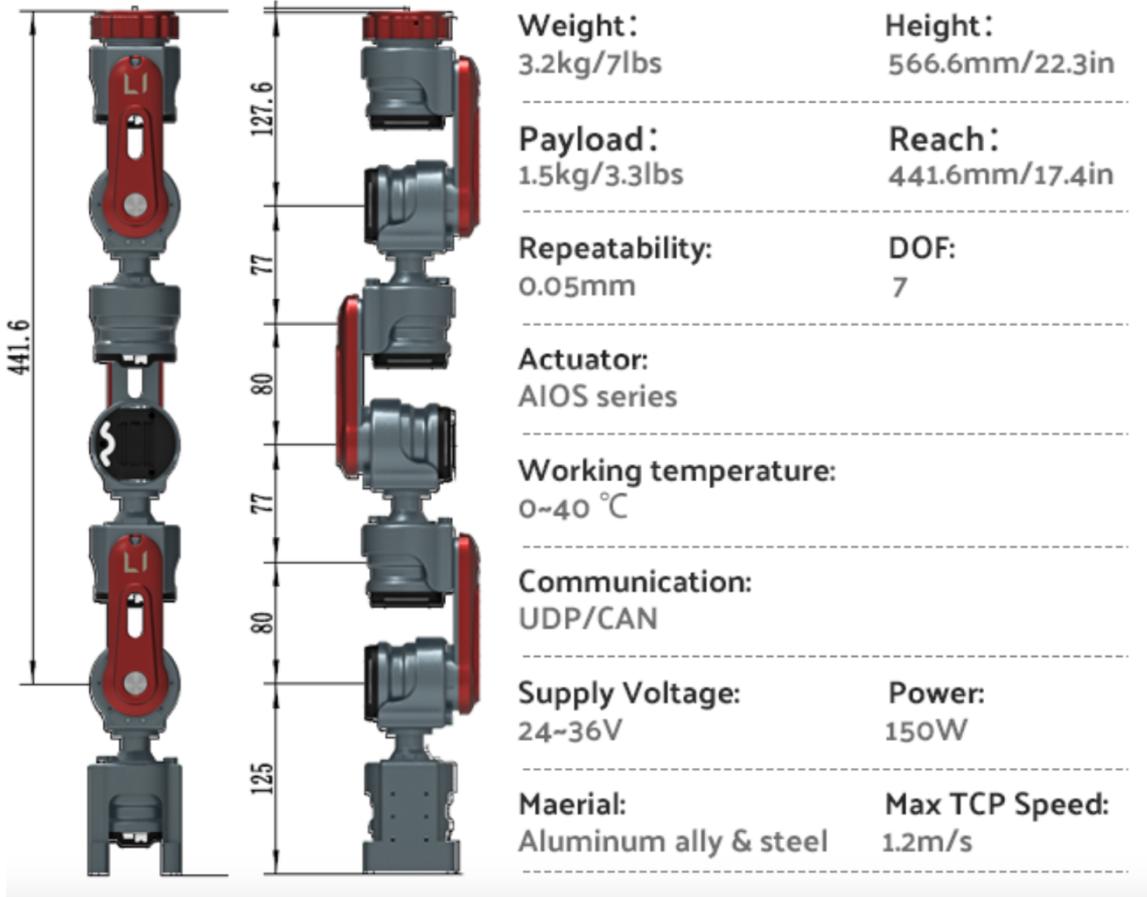
/***** Initialization of the "MeccaBrain" to a specific I/O pin *****/
MeccaBrain :: MeccaBrain(int pmwPin){
    pinMode(pmwPin, OUTPUT);
    _pmwPin = pmwPin;

    for (int x = 0; x < 4; x++){
        outputByte[x] = 0xFE; // initialize output data
        moduleType[x] = '_';
    }
}

/* end */
```

PHASE - II





A photograph of a person's right hand held open, palm facing forward. A 3D skeleton model is overlaid on the hand, showing the bones and joints. The background is a workshop or laboratory setting with a pegboard wall and various tools and equipment.



Team Name	Team Leader's Name	Team Leader's Email	Results
P Delta V	Pavan	pdurgavpavan2001@gmail.com	Finalists
Code	Mayank Sinha	mayanksinha222000@gmail.com	Finalists
Ventor	Vikram	vikramksc2604@gmail.com	Finalists
Matrix maker's	Naman Mehta	naman.mehta1102@gmail.com	Finalists
686246-U3T0M28K	Shivam Gupta	shivamgupta2916@gmail.com	Finalists
686246-U45L95UG	Chaitanya Kusumanchi	chaitanyakusumanchi@gmail.com	Finalists
686246-U4F5C25S	piyaansh thukral	piyansh2001@gmail.com	Finalists
ROBO_ROCKS_1847	Mehul Anand	mehul_a@mt.iitr.ac.in	Finalists
Team Dyas	Sneh Shah	sneh77672@gmail.com	Finalists
SAVG_KRS	Gunjan Paul	gunjanpaul99.9@gmail.com	Finalists
SEDERICA - UMIC	Akshat Gupta	innovation.cell@itb.ac.in	Finalists
TenZero	K S Anupam Krishna	anupamkris13262@gmail.com	Finalists
RoboSapiens	Akanksha Raj	2020ucs0109@ijammu.ac.in	Finalists
Sky Surfers	Yugapranav V	yugapranav.cd22@bitsathy.ac.in	Finalists
Armatron	NIKHIL SHARMA	n_sharma@ce.iitr.ac.in	Finalists
King	Ujjwal Bisht	ujjwal.bisht019@gmail.com	Finalists
686246-UC2WU119	Dhiraj Mehta	dhirajmehta2323@gmail.com	Finalists
Retro Sapiens	Kishore Paranthaman	kishoreparanthaman@gmail.com	Finalists
ATOM	Aakshar Ruchin	aakshargarg@gmail.com	Finalists
LITTLE CHAMPS	VINITH KUMAR	vinithkumar.ei20@bitsathy.ac.in	Finalists
Grid Grippers	Hemanth Patel	hemanth.patel.mec21@itbhu.ac.in	Finalists
686246-UN16D9V2	Kanyakumari Gopalghare	kanyakumariappasahabgopalghare.mech2020@citchennai.net	Great Attempt
Dynamo crew	PABBA PAVAN KUMAR	pavanpabba543@gmail.com	Great Attempt
686246-U9U1ZP59	Soham Chakraborty	schakraborty845@gmail.com	Great Attempt
686246-UBC7133R	SAHARSH GUPTA	saharshg29@gmail.com	Great Attempt
ElectroMinds	Saikat Chowdhury	saikatmagician@gmail.com	Great Attempt
LMNTRIX	Santhosh K	santhoshk1654@gmail.com	Great Attempt
Team Roboco BPPC	UTKARSH SHUKLA	f20202007@planit.bits-pilani.ac.in	Great Attempt
RoboRevolutionaries	Akshat Srivastava	akshatshrivastava1823@gmail.com	Great Attempt
Dronacharya Yantramana	KARTHIK PP	zeus.karthik11@gmail.com	Great Attempt
Innov8it	Somnath M	soma2205da@gmail.com	Great Attempt
LAST OF US	Alwin Paldano	alwinpaldano@gmail.com	Great Attempt
686246-U73L34QW	AYUSH AYUSH	ayush.220118mee@iitbh.ac.in	Great Attempt
ReferenceError	Prathamesh Chavan	prathamesh.chavansps2018@gmail.com	Great Attempt
Robonauts@NIT-B	Aman Sharma	amansharma28012002@gmail.com	Great Attempt
686246-UD81B63C	Lalit Agrawal	lalitagrwall680@gmail.com	Great Attempt
686246-UDWX2640	SANSKAR PURWAR	2021umt0189@ijammu.ac.in	Great Attempt
SKYHIGHa	Narendren S	narendrengom@gmail.com	Great Attempt
686246-UP9NQ905	Ajay Devaraj	ajay21001@iitd.ac.in	Great Attempt
Whatevs	Shreyas Kumar	shreyaskumar.1102@gmail.com	Great Attempt
686246-UX3MK612	Shashwat Patil	shashwat.phe22@itbhu.ac.in	Great Attempt
686246-UZ336V7P	Sidharth Priyadarshi	imsidharthpriyadarshi@gmail.com	Great Attempt
Team Zero Aesthetics	Pratik Chavan	pratikchavan557@gmail.com	Great Attempt
ECO Warriors	Saba Mazhar	sabamazhar0021@gmail.com	Great Attempt
Dhruvesh Naik	Dhruvesh Naik	naikdhruvesh1373@gmail.com	Great Attempt
Robo-Mates	Aniket Apraj	aniketaprj1002@gmail.com	Made a good effort - Built Bot and Image Processing demonstrated
Robo_Proxy	RAJEEV GUPTA	rajeev@ph.iitr.ac.in	Made a good effort - Built Bot and Image Processing demonstrated
FALCON	Adithya L.	adithya.se22@bitsathy.ac.in	Made a good effort - Built Bot and Image Processing demonstrated
Team-alpha	RAVINVARMA E D	ravivarma.mc21@bitsathy.ac.in	Made a good effort - Built Bot and Image Processing demonstrated
D-Coders,RATHISH	RATHISHBARATH S L	20eu029@kocet.ac.in	Made a good effort - Built Bot and Image Processing demonstrated
Team AriES	Mohit	mkgaутam31102002@gmail.com	Made a good effort - Built Bot and Image Processing demonstrated
Bit_Byte_Bots	PRANAV KUMAR TAK	takpranavkumar@gmail.com	Made a good effort - Built Bot and Image Processing demonstrated
Free Folks	Dibasmit Pal	paldibasmik@gmail.com	Made a good effort - Built Bot and Image Processing demonstrated
Alrobo	Amanath Jejurkar	amarjejurka56@gmail.com	Made a good effort - Built Bot and Image Processing demonstrated
686246-U7A419KU	CHINMAYA LENKA	chinmaya lenka183@gmail.com	Made a good effort - Built Bot and Image Processing demonstrated
686246-U7A6S3V8	Om Sakharkar	sakharakrom777@gmail.com	Made a good effort - Built Bot and Image Processing demonstrated
TRC AMRITA	RISHIKESH T NAIR	rishikeshnair@gmail.com	Made a good effort - Built Bot and Image Processing demonstrated
Kpr Mechatronz	Naresh K	nareshkrishnamoorthy26@gmail.com	Made a good effort - Built Bot and Image Processing demonstrated
Vivek robot	Vivek Kumar	vivekkumarbeg7@gmail.com	Made a good effort - Built Bot and Image Processing demonstrated
Rockie	Rahul Raina	rahulraina2002@gmail.com	Made a good effort - Built Bot and Image Processing demonstrated
MechMinds	Anubhav Hooda	hoodaanubhav@gmail.com	Made a good effort - Built Bot and Image Processing demonstrated
CHRONOS	Karthikcien E	ch.en.u4cce21024@ch.students.amrita.edu	Participation Certificate - Built a working bot
686246-U6L796U	Rohan Dobriyal	rohandobriyal196@gmail.com	Participation Certificate - Built a working bot
AERO CREW	Pritesh Dhakate	priteshdhakate26@gmail.com	Participation Certificate - Built a working bot
686246-UKM124S5	Thulashitharan D	thulashitharan.dj@gmail.com	Participation Certificate - Built a working bot
ROBO-freaks	Ankit Kumar	krishnahzb1.ak@gmail.com	Participation Certificate - Built a working bot
686246-U1XYR520	Satyam mishra	satyamkmishra22550@gmail.com	Participation Certificate - Built a working bot
686246-U26K78XA	Harsh Upadhyay	harshupadhyay0213@gmail.com	Participation Certificate - Built a working bot
Team RED	VIVEK KUMAR	vivekrealc2@gmail.com	Participation Certificate - Built a working bot
1&0	Dipti Apage	diptapage@gmail.com	Participation Certificate - Built a working bot
686246-U341XK3Y	JUGNU CHOURIYA	jugnu3@gmail.com	Participation Certificate - Built a working bot
686246-U52ZN5E52	Aditya Chopra	31057csiot@gmail.com	Participation Certificate - Built a working bot
The Lex-xes	Atharva Ahire	atharvaahire203@gmail.com	Participation Certificate - Built a working bot
Giltch	Shreya Reddy	brshreyareddy2959@gmail.com	Participation Certificate - Built a working bot
KRS	Purendra Vishwakarma	purendrav02@gmail.com	Participation Certificate - Built a working bot
BPL	Aditya Sah	adityas Ug_22@ee.nits.ac.in	Participation Certificate - Built a working bot
686246-UGM93D62	Bibin Thomas	drbibinthomas007@gmail.com	Participation Certificate - Built a working bot
SeerFrisk	Vaidehi Deshmukh	vaidehisdm18@gmail.com	Participation Certificate - Built a working bot