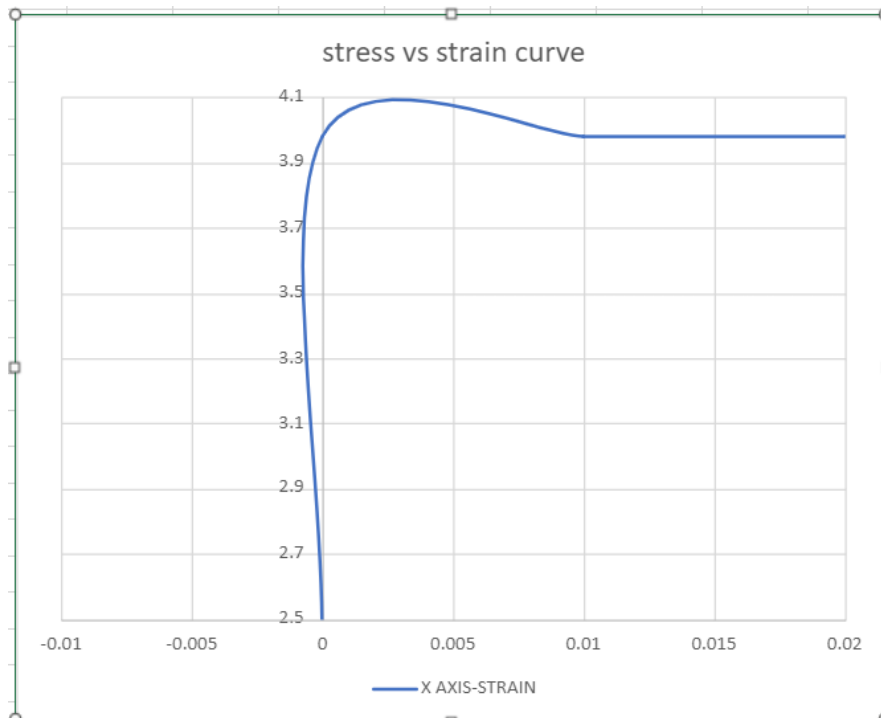


## REPORT OF GROUP B-12 A

## MS101

### A. Graph



\*Initially when we presented demo to professor the upper gripper compressed the workpiece instead due to which we got negative value of strain later reversing polarity of motor we got proper value of stress from 3.98 Pa.

## B. Raw Data

[illegible]

## C.ARDUINO CODE

```
unsigned int pulseCount=0; // No of pulses counted
unsigned char index=0;      // A dummy index used to store Current
readings in an array
int r;
int i;
float Averaged_A0;
int y;
float strain;
float stress;

#define mtrDirPin1 7 // In1 Pin on Motor Driver - Controls Motor
Direction
#define mtrDirPin2 8 // In2 Pin on Motor Driver - Controls Motor
Direction
#define mtrEnPin 9    // EnA Pin on Motor Driver - Turns Motor ON/OFF
#define irPin 2       // This is the IR sensor's (near the encoder disc)
Output Pin
#define currentPin A0 // This pin will be used to sense Motor Current
#define isrTestPin 13 // This pin will toggle every time ISR is called

unsigned int analogValues[100]; // Stores last hundred ADC readings

void setup()
{
    // This code will run once initially
    pinMode(mtrDirPin1,OUTPUT);
    pinMode(mtrDirPin2,OUTPUT);
    pinMode(mtrEnPin,OUTPUT);
    pinMode(irPin,INPUT);
    attachInterrupt(digitalPinToInterrupt(irPin),pulseDetected,FALLING);
    pinMode(isrTestPin,OUTPUT);
    Serial.begin(9600);
    digitalWrite(mtrDirPin1,HIGH);
    digitalWrite(mtrDirPin2,LOW);
    digitalWrite(mtrEnPin,HIGH);
    // Full Speed
    // analogWrite(mtrEnPin, 128); // Variable Speed, set second parameter
0 - 255
}

void loop()
{
    y = analogValues[index];
    stress = (0.0202*y+ 29.4)/12;
```

## D. Fabrication Sheet

[illegible]

<b>M/S 101 Makspace Fabrication Request Form – Autumn 2023</b>												
										Team ID: <b>B12A</b>		
Team Member Names and Roll Numbers:												
(I) <b>KAPAMUDRA BISWAL</b> <b>2380049 ✓</b>						(II) <b>Shreya Tare</b> <b>2380050 ✓</b>						
(III) <b>HARSHVEEN VINAY MATHYU</b> <b>2380052</b>						(IV) <b>KRISHANK SINGH</b> <b>2380051</b>						
(V) <b>Vikrupa Pali</b> <b>2380053</b>						(VI) <b>Arun N. Bhatnagar</b> <b>2380054</b>						
Team Mentor (Project TA) Names and Signatures: (ME Mentor)						Team Mentor (EE Mentor)						
<b>What we are going to provide:</b>												
1. Acrylic sheets: 5 mm and 10 mm thickness. Maximum sheet size available to you is 60 cm X 60 cm, of each.												
2. Acrylic rods: 3 rods of 12 mm diameter and 30 cm long. (3) <b>2mm 21110</b>												
3. Aluminium rods for leadscrew: 3 each of 10 mm diameter and 20 cm length. (3) <b>2mm 21110</b>												
4. Aluminium Hexagonal Rod with 18 mm Diameter (Nut making): 10 cm length.												
5. Bearing 2 nos 10mm (21110) <b>Sunil</b>												
<b>Section 1: Lathe for screw and nut</b>												
1. The lathe is required to make the leadscrew and nut combination. A maximum of three (3) leadscrew-nut components are allowed to be made. The maximum threaded length that can be fabricated in Makerspace lab is 10 cm. There are few lathes available in makerspace. So, you will need to ensure that your lab period is used to make these jobs with the help lab staff and TAs.												
<b>Section 2: 3D Printing – It is only allowed for grips as well as any innovative part in your design that is discussed approved by the respective instructor.</b>												
1. <b>Weight and Printing Time:</b> The total weight of all parts must NOT exceed 150 g AND the total printing time must NOT exceed 5 hrs. Your team must ensure that all parts are within these limits before submitting the job for printing.												
2. <b>Job Submission:</b> Submission time will be the first 30 minutes of your lab slot. Kindly fill up the details in this form and the logbook available with lab staff. It is your team's responsibility to submit the job with the help of a lab engineer and monitor the progress (for the first 10 minutes and every 30 minutes after that). In case of any printing issues, please stop the printing and contact the lab engineer immediately.												
3. <b>Misuse of Machine:</b> ANY misuse of the 3D printer will attract a grade penalty. Ensure that your team is following all safety guidelines and using the 3D printer correctly.												
4. <b>Job Collection time will be 9:30 AM – 11:30 AM, and 2 PM – 4 PM every day. A team member MUST produce this form to collect the completed part.</b>												
Job #	Part Name	Weight (g)	Printing Time (min)	Verification by ME mentor (sign)	Job Submission Details				Job Collection Details			
					Machine Number	Date	Time	Lab Engineer Sign	Date	Time	Team Member Sign	Lab Engineer Sign
<b>Total</b>												

Please note: This form is non-transferrable and cannot be used by anyone other than the designated team member. The form will not be re-issued if lost, so please ensure that you keep it safe and secure. For all Makerspace lab fabrication related issues contact your TA or Staff (Sunil Khalekar).

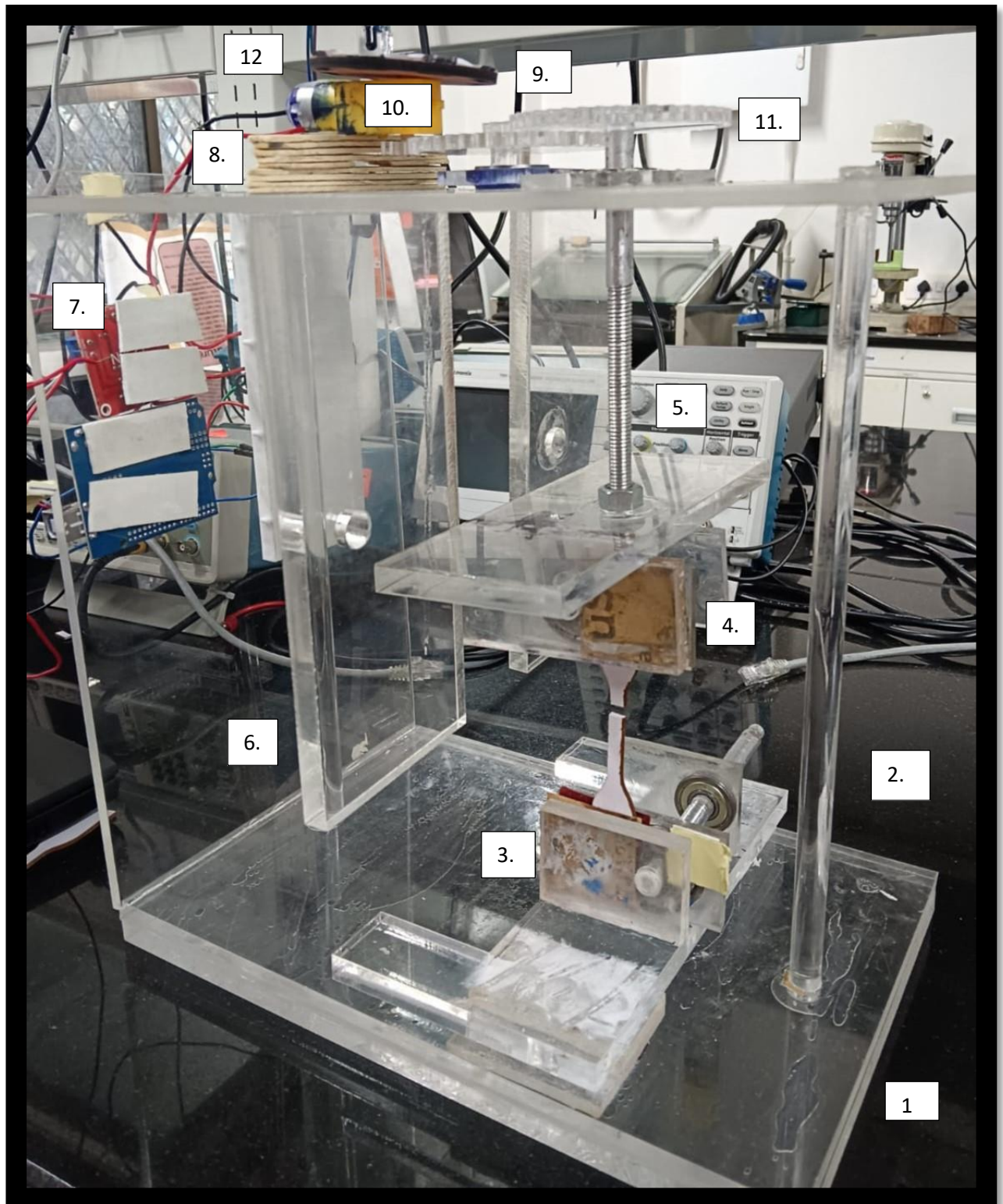
## 1. Ball Bearings-3

## 2.IR Sensor-1

#### 4.Nuts-3



## E.UTM parts



1.Lower Base

2.Support Rods

3.Lower Gripper

4.Upper Gripper

5.Leadscrew

6.Slider for upper gripper

7.Circuit Stand

8.Motor mount

9.Circular disk

10.Motor

11.Gears

12.IR sensor

## F . Roles and contribution

	Roll no.	Role
1.	23B0049	<ul style="list-style-type: none"><li>• Ideation in design</li><li>• Made 3 min video and report</li><li>• Fabrication</li></ul>
2.	23B0050	<ul style="list-style-type: none"><li>• CAD modelling of UTM</li><li>• Ideation in design</li><li>• Fabrication</li></ul>
3.	23B0051	<ul style="list-style-type: none"><li>• Ideation in design</li><li>• Electrical part(Circuit)</li></ul>
4.	23B0052	<ul style="list-style-type: none"><li>• Ideation in design</li><li>• Code and electrical</li></ul>
5.	23B0053	<ul style="list-style-type: none"><li>• Ideation in design(upper gripper)</li><li>• 2D sketch of UTM</li><li>• Fabrication</li></ul>
6.	23B0054	<ul style="list-style-type: none"><li>• Ideation of design(circuit mount, Gear)</li><li>• Fabrication</li><li>• Electrical circuit and code</li></ul>

Hrishikesh

G.YOUTUBE LINK:-

[https://youtube.com/shorts/xVYfgQ\\_1JiY?feature=shared](https://youtube.com/shorts/xVYfgQ_1JiY?feature=shared)



23B0052

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**Roll no** 23B0052  
**Department** Aerospace Engineering

**Name** Hrishikesh Vijay Mavily  
**Program** B.Tech.

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### Academic Performance Summary

Year	Sem	SPI	CPI	Sem Credits Used for SPI	Completed Semester Credits	Cumulative Credits Used for CPI	Completed Cumulative Credits
2023	Spring	8.06	8.08	31.0	31.0	62.0	62.0
2023	Autumn	8.1	8.1	31.0	31.0	31.0	31.0

### Semester-wise Details

\*This registration is subject to approval(s) from faculty advisor/Course Instructor/Academic office.

Year/Semester: 2024-25/Autumn

Course Code	Course Name	Credits	Tag	Grade	Credit/Audit
AE 223	Thermodynamics and Propulsion	6.0	Core course	Not allotted	C
AE 227	Solid Mechanics	6.0	Core course	Not allotted	C
AE 229	Introduction to Aerodynamics and Propulsion Laboratory	3.0	Core course	Not allotted	C
AE 231	Introduction to Aerospace Structures and Control Laboratory	3.0	Core course	Not allotted	C
AE 308	Control Theory	6.0	Core course	Not allotted	C
EC 101 (D2)	Economics	6.0	Core course	Not allotted	C
ES 250	Environmental Studies : Science and Engineering First Half	3.0	Core course	Not allotted	N
HS 250	Environmental Studies Second Half	3.0	Core course	Not allotted	N

SC 639  
(M) Mathematical Structures for Control

6.0

Minor

Not  
allotted C

### Year/Semester: 2023-24/Spring

Course Code	Course Name	Credits	Tag	Grade	Credit/ Audit
AE 152 (D2)	Introduction to Aerospace Engg.	6.0	Core course	BB	C
CS 101 (D2)	Computer Programming and Utilization	6.0	Core course	AB	C
ENT101	Introduction to Innovation & Entrepreneurship	4.0	Core course	AB	C
MA 110 (D2)	Linear Algebra and Differential Equations	8.0	Core course	CC	C
NOCS02	NCC/NSS/NSO	0.0	Core course	PP	N
PH 117 (P10)	Physics Lab	3.0	Core course	BB	C
SOM101 (S2)	Introduction to Management	4.0	Core course	AA	C

### Year/Semester: 2023-24/Autumn

Course Code	Course Name	Credits	Tag	Grade	Credit/ Audit
AE 103	A historical perspective of Aerospace Engineering	6.0	Core course	BB	C
BB 101 (D2)	Biology	6.0	Core course	BB	C
CH 117 (P10)	Chemistry Lab	3.0	Core course	AB	C
GC 101	Gender in the workplace	0.0	Core course	PP	N
MA 105 (D2)	Calculus	8.0	Core course	BB	C
MS 101 (P10)	Makerspace	8.0	Core course	BB	C
NOCS01 (S1)	NCC/NSS/NSO	0.0	Core course	PP	N

[Report Problem](#)