

Tortion testing machine

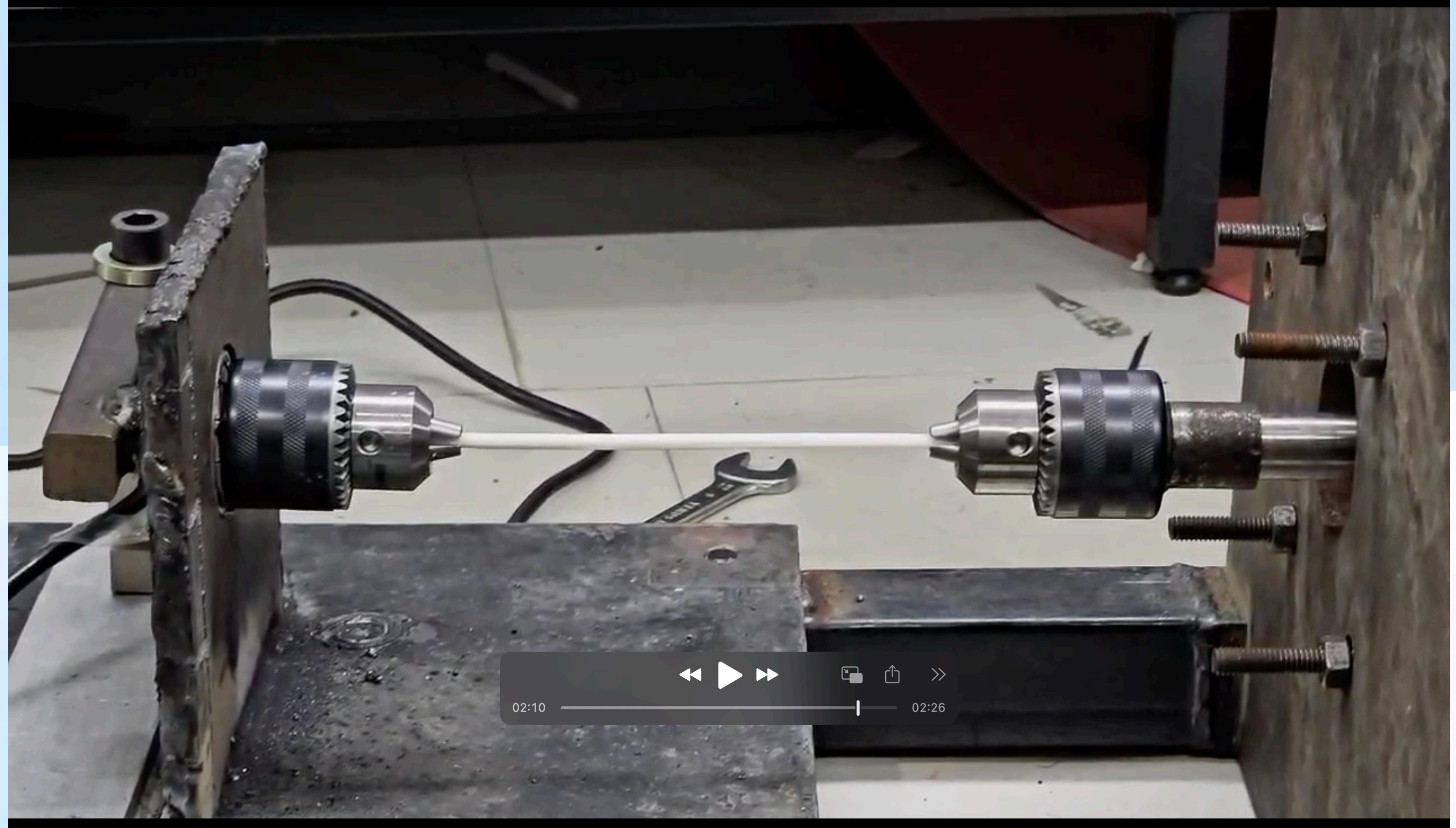
GroupD(Mon)

Aim of the Project

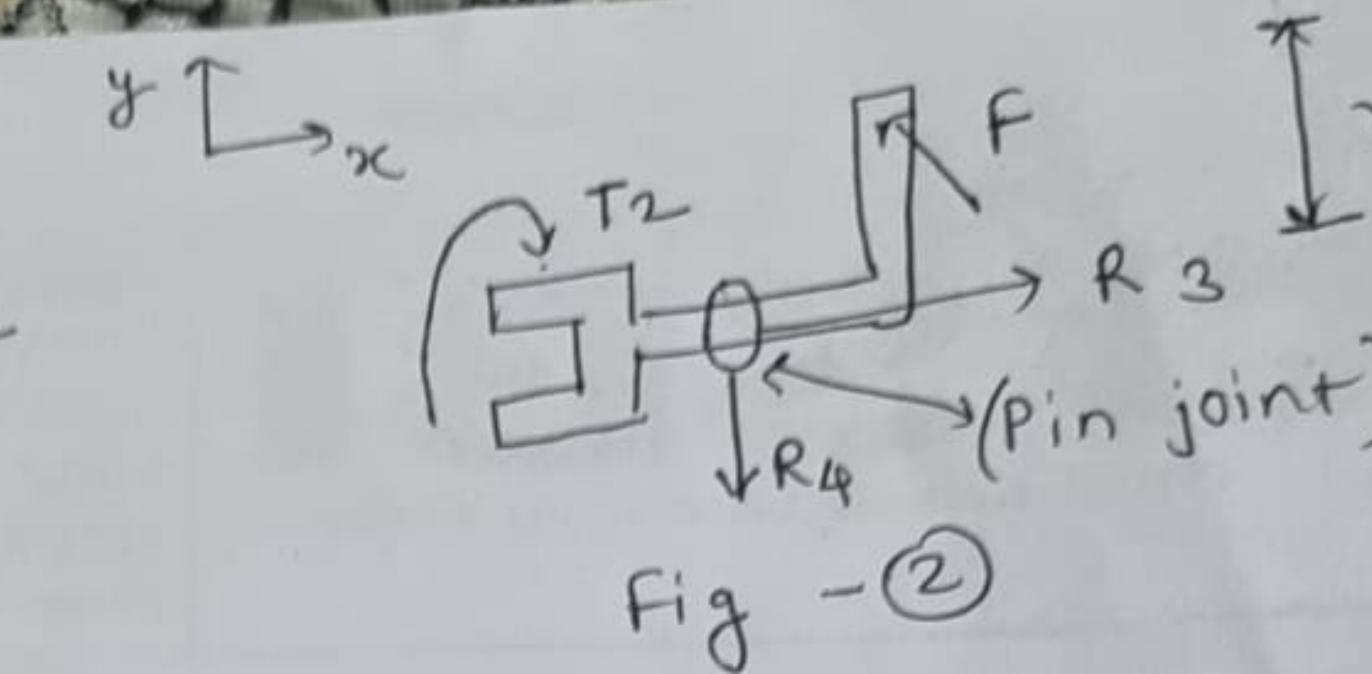
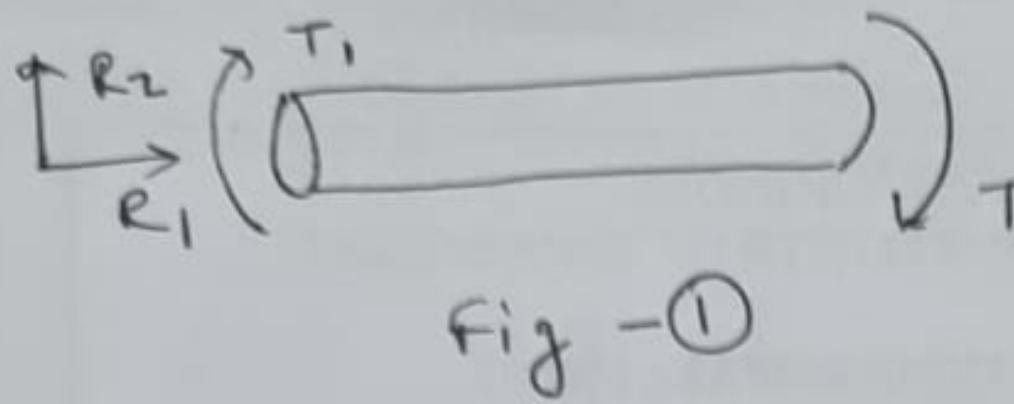
- To measure the torque
- To calculate relation between torque and angle of twist.

Components Used

- Sample
- Motor driver
- Arduino
- Load cell
- Chuck
- Stepper motor
- Bearing
- Setup



FBD of our Setup



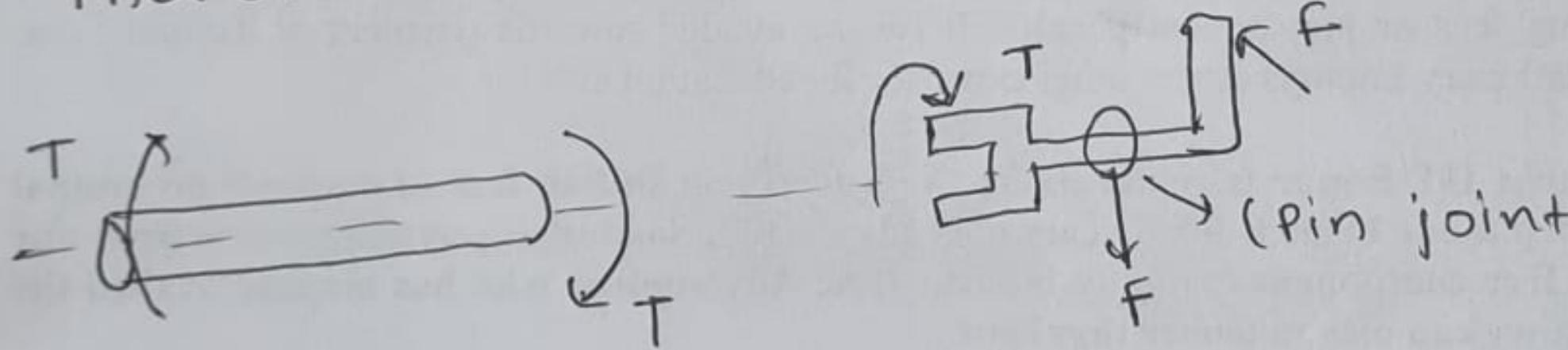
By force Balancing & Moment
Balancing on fig -②

$$R_4 = F, \quad R_3 = 0, \quad T_2 = Fr$$

similarly with fig -①

$$\therefore T_1 = T_2, \quad R_1 = 0, \quad R_2 = 0$$

Therefore final FBD will be

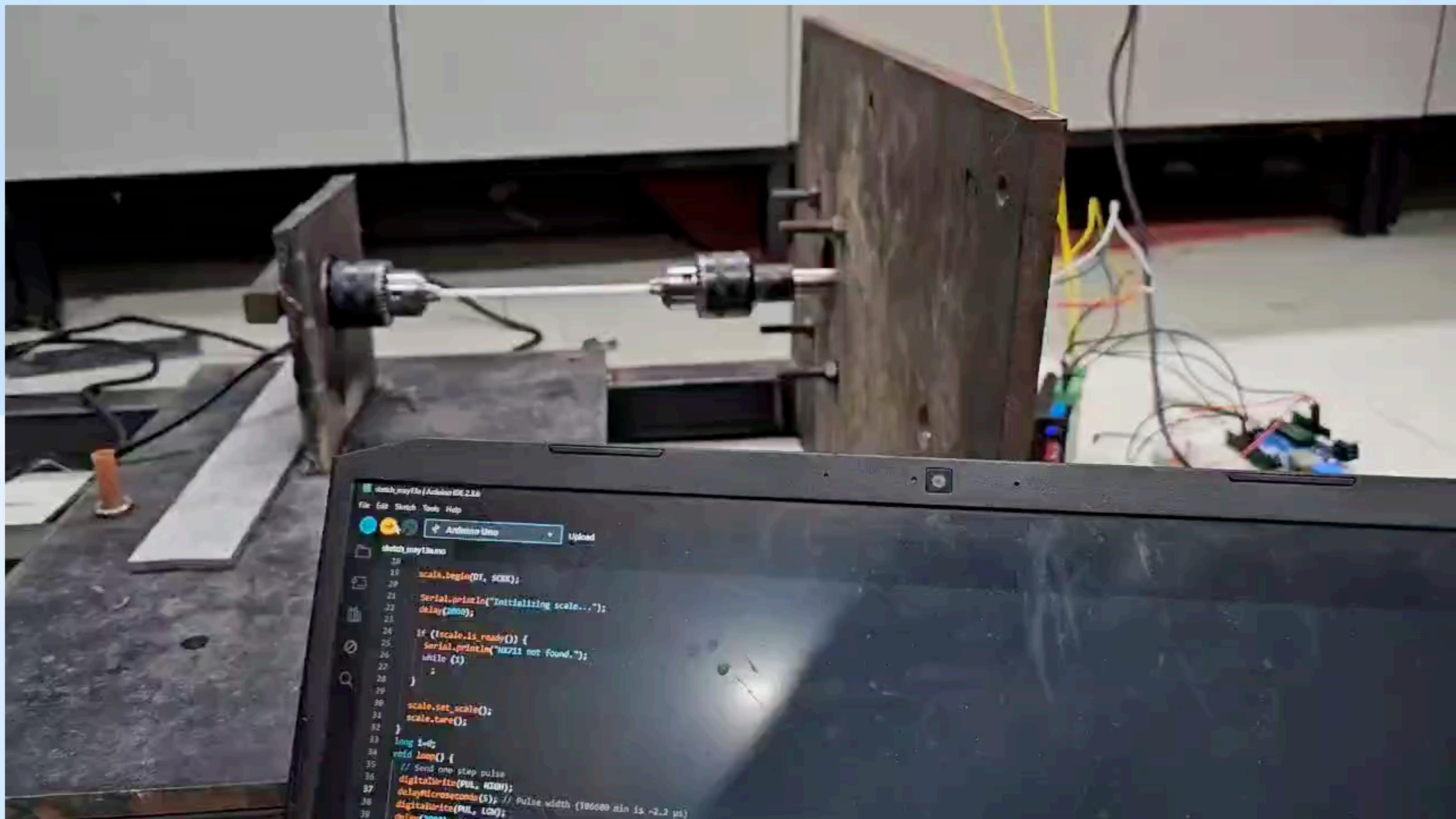


$$\text{where } \underline{\underline{T = Fr}}$$

$$\text{as our } r = 12\text{ cm} = 0.12\text{ m}$$

$$\therefore \boxed{T = 0.12 \times F} \rightarrow \text{reading from load cell}$$

Our Project in working



- We know this relation between T, θ, I, J and G .
- We can calculate the value of G by this relation.

ANGLE OF TWIST

$$\theta = \frac{TL}{GJ}$$

Individual Contributions

- Suyog Bewle:- Setup part and calculating dimension of sample
- Yogesh Rawal:- Coding part and Initial Setup design.
- Agrasen Yadhav:- Circuit, Setup part
- Surendra Sahu:- Assembly and Setup part
- Urvashi :- Coding and Circuit part