3 JAW GRIPPER
GRIPPER

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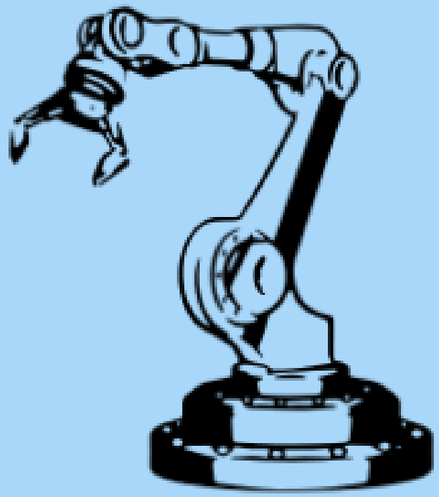
INTRODUCTION

Three Finger Gripper in Brief

- Three-finger grippers feature three jaws that close onto the item and hold it in the center.
- Commonly used for round or cylindrical items.



Grippers are the most important part of any robotic design or functioning of robot because without gripper it's impossible to perform operation.

3 Jaw Pneumatic Gripper

Releasing the object

When compressed air is passed double acting cylinder, the rod moves outward, which opens the gripper

Holding the object

When the already filled compressed air is passed double acting cylinder, the rod moves inwards, which closes the gripper

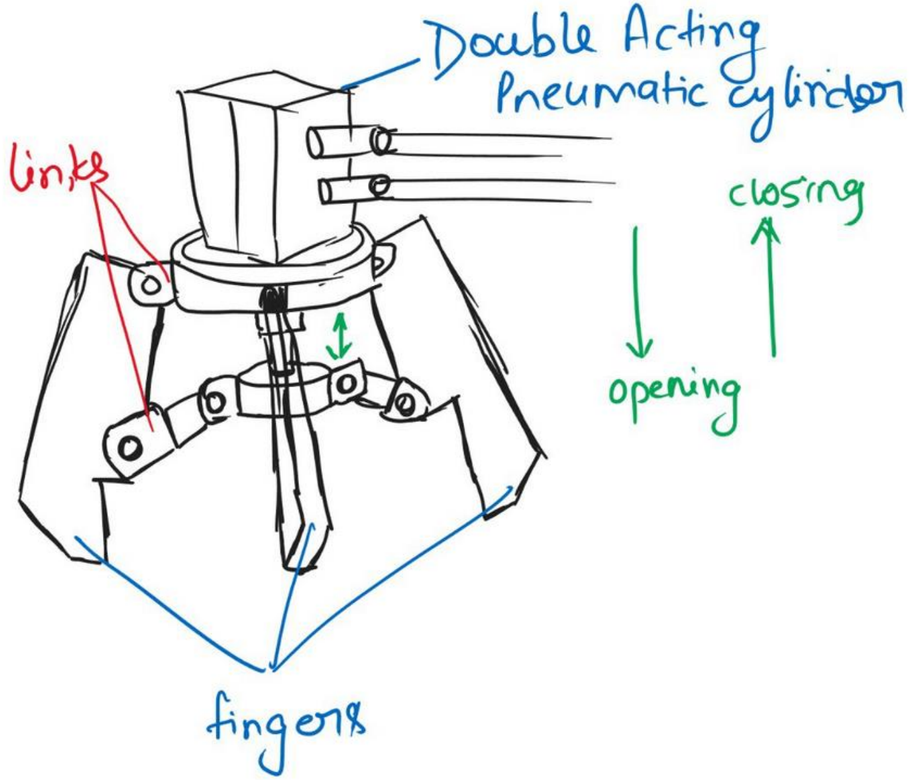
Components

01 Double Acting Actuator

02 Three jaws

03 Links

04 Pins



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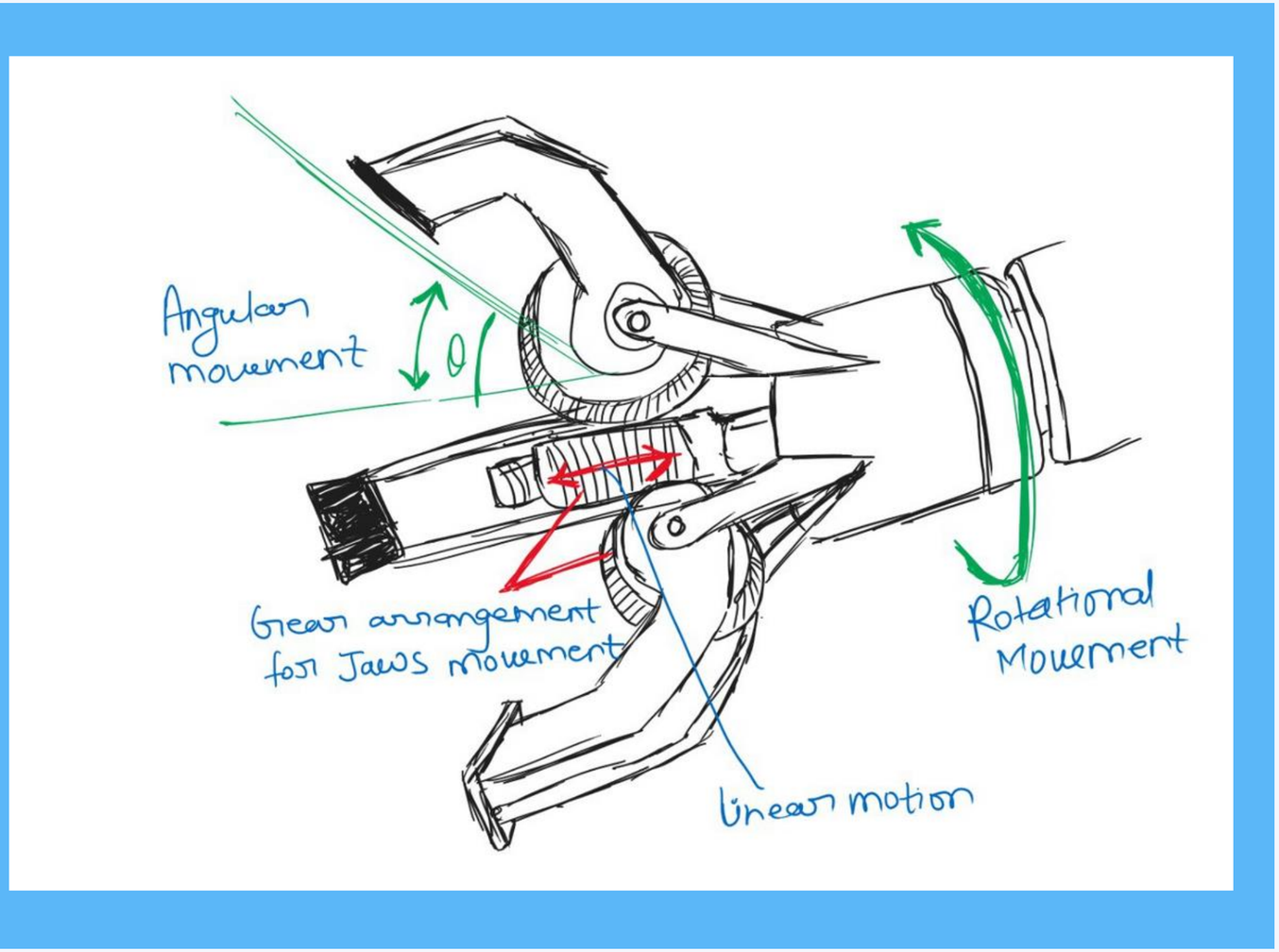
Components

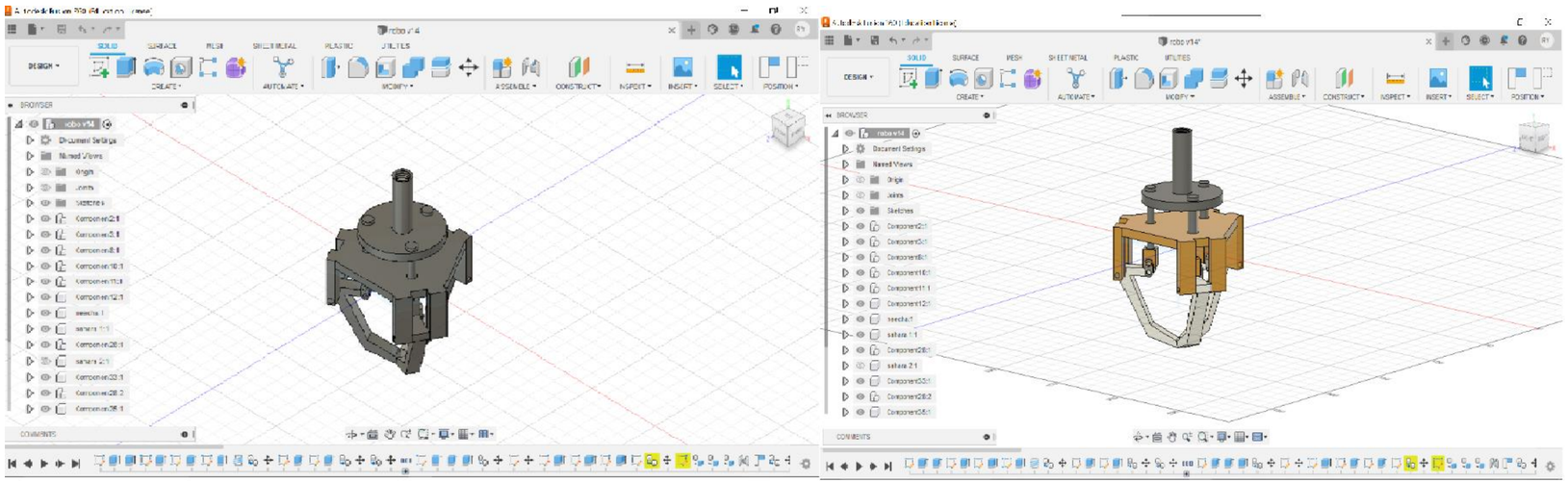
01 Ball Screw Arrangement (Stepper motor)

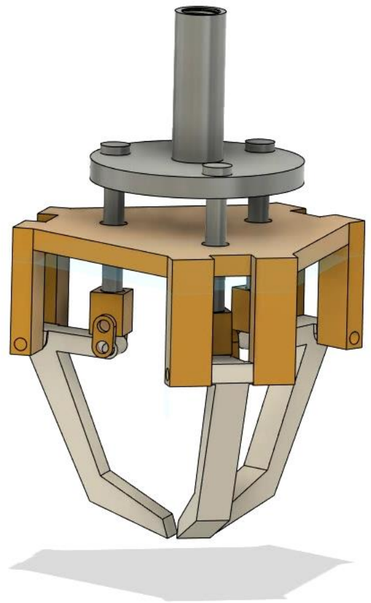
02 Three jaws

03 Gear arrangement for Jaw movement

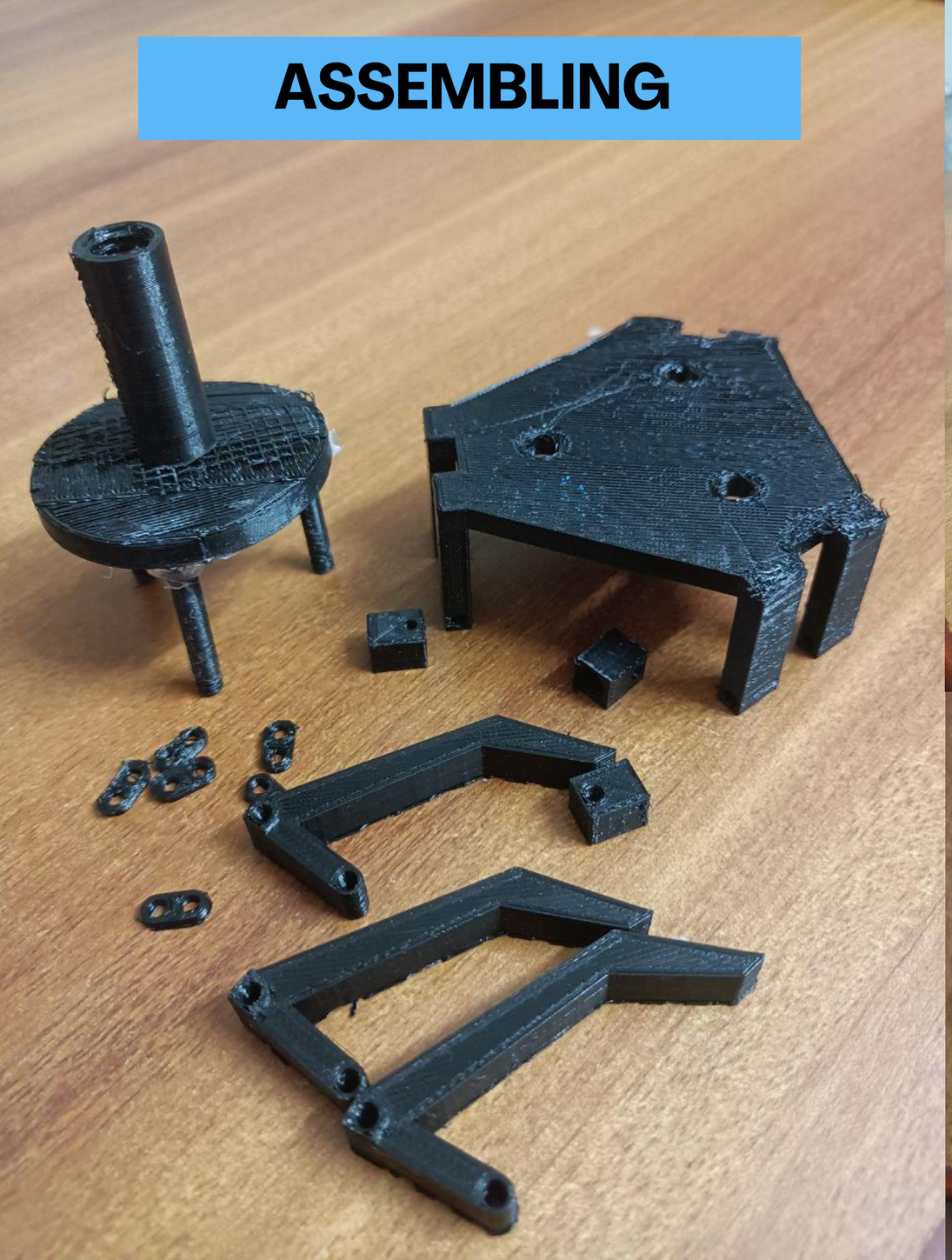


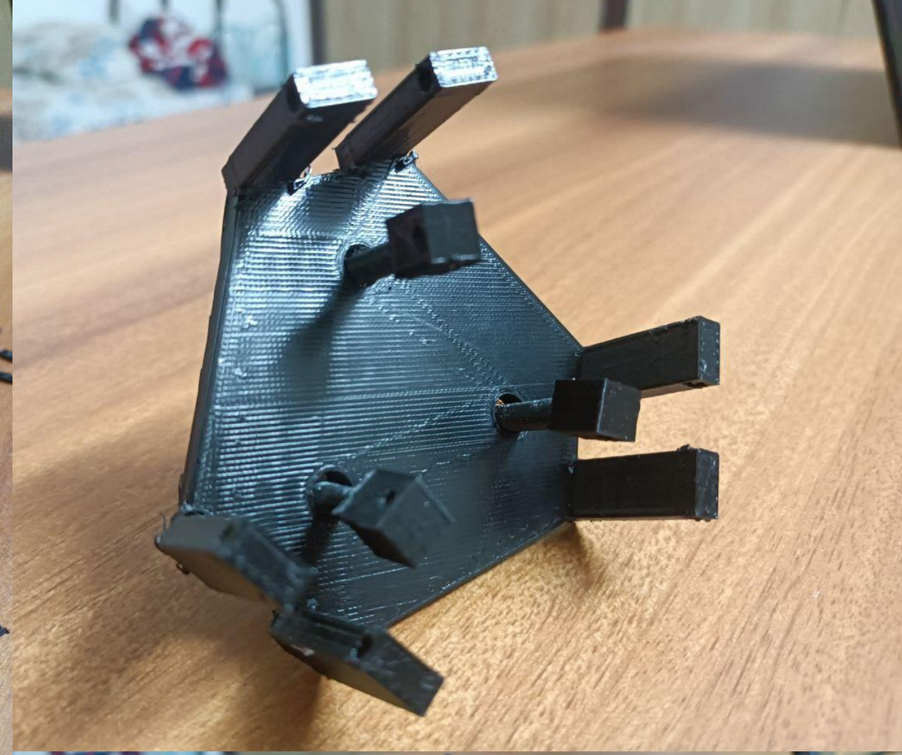
3D Model

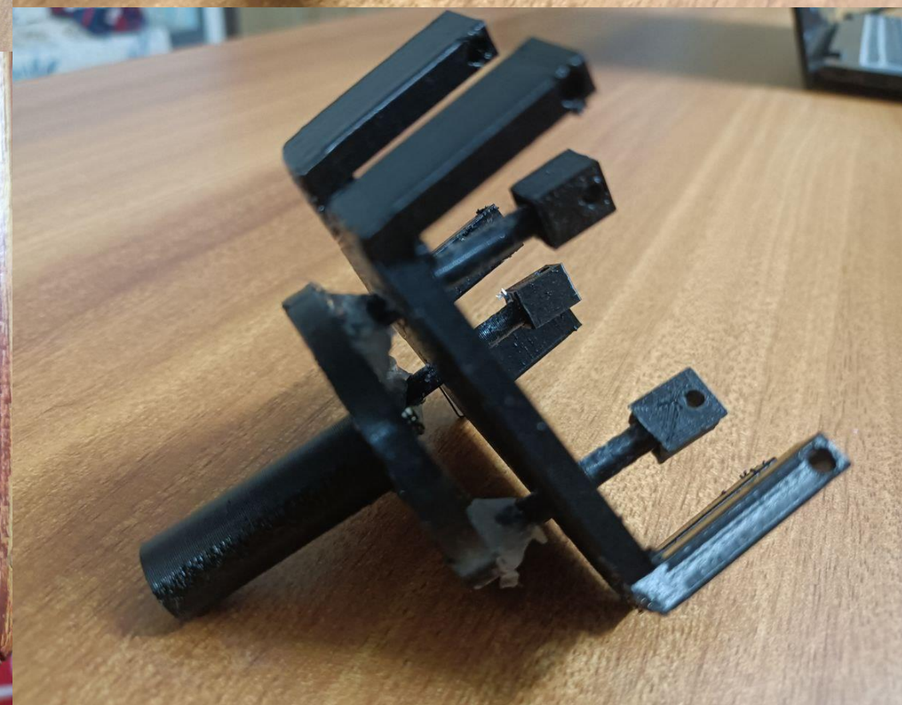




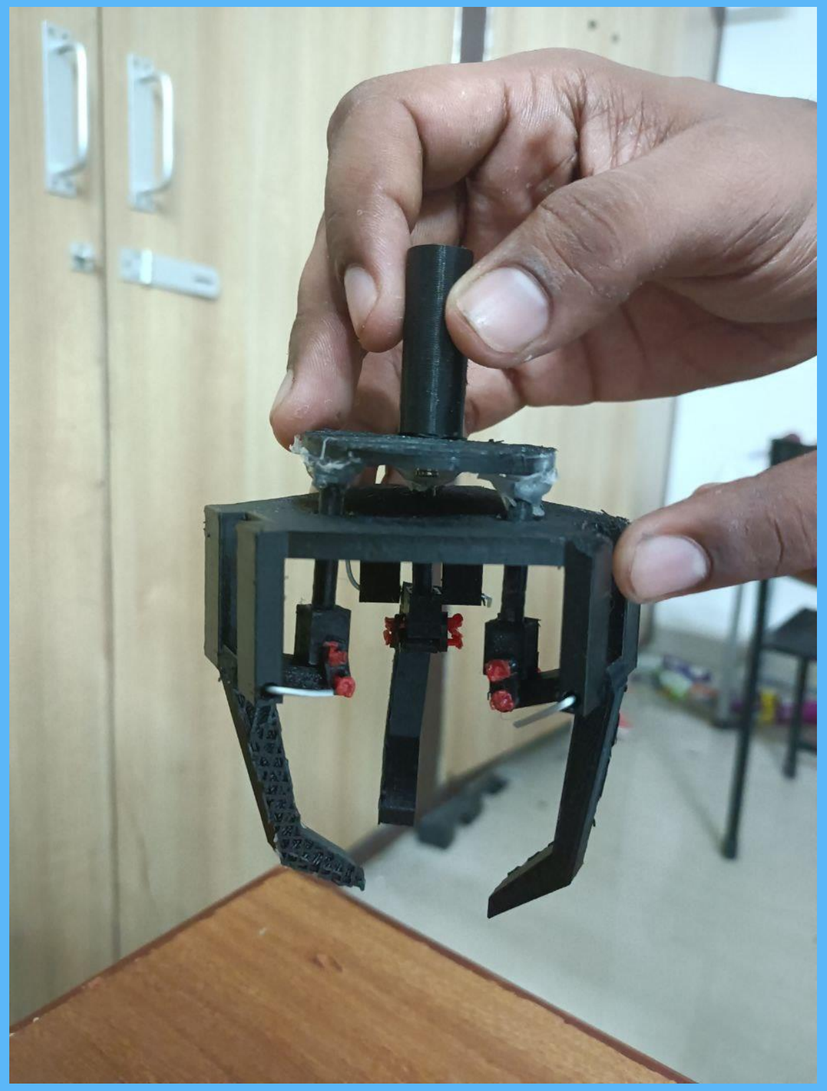
ASSEMBLING

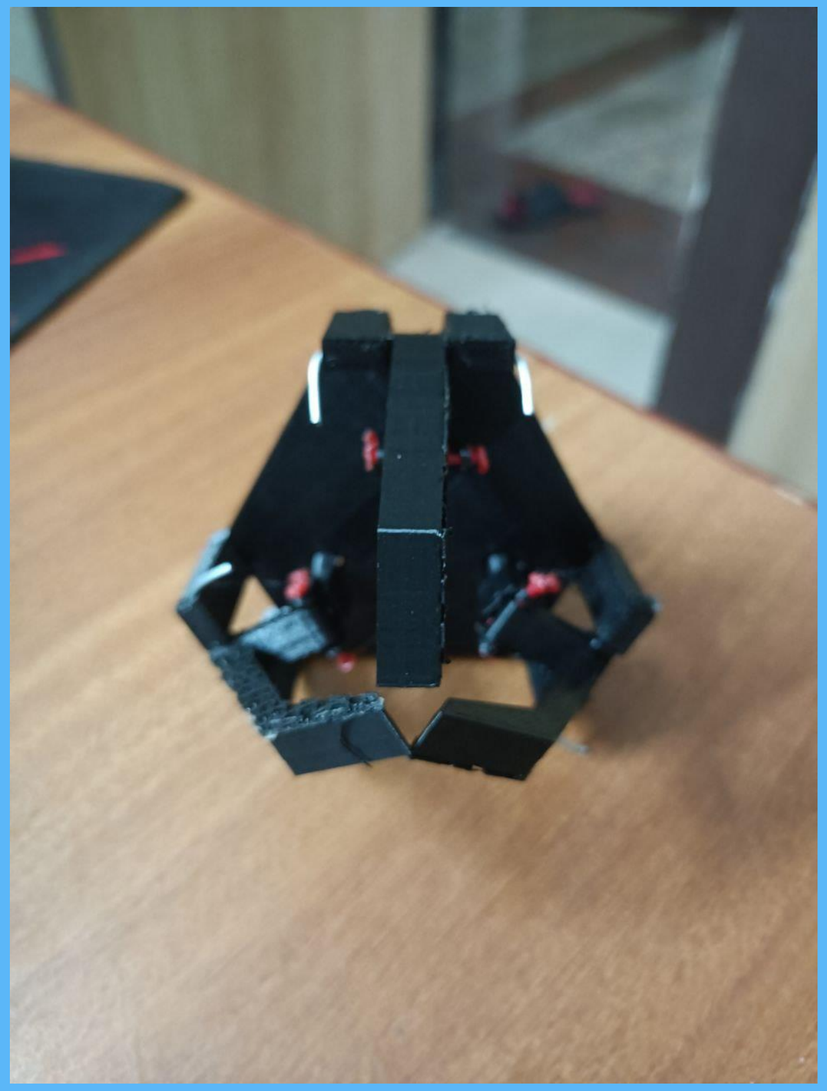






ASSEMBLED MODEL





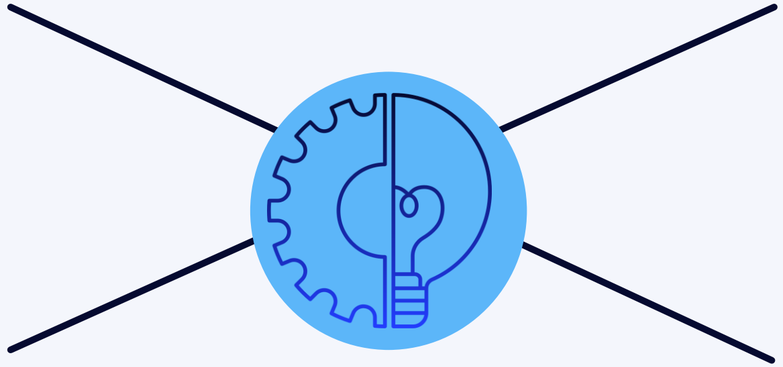
LEARNINGS

Always use fillets at joins before 3D printing

Our 3 rod type parts whose diameter was lowest, got disengaged from base since fillets were not given on its joints

Simulation Helps

After first simulation we observed that our jaw motion as restricted, the improvised the model and proceeded



Threads diameter usually shrinks after 3D printing

After 3D printing our model the thread diameters shrank

Testing of Durability of simulation is vital

Rubber can be placed at end to increase the grip

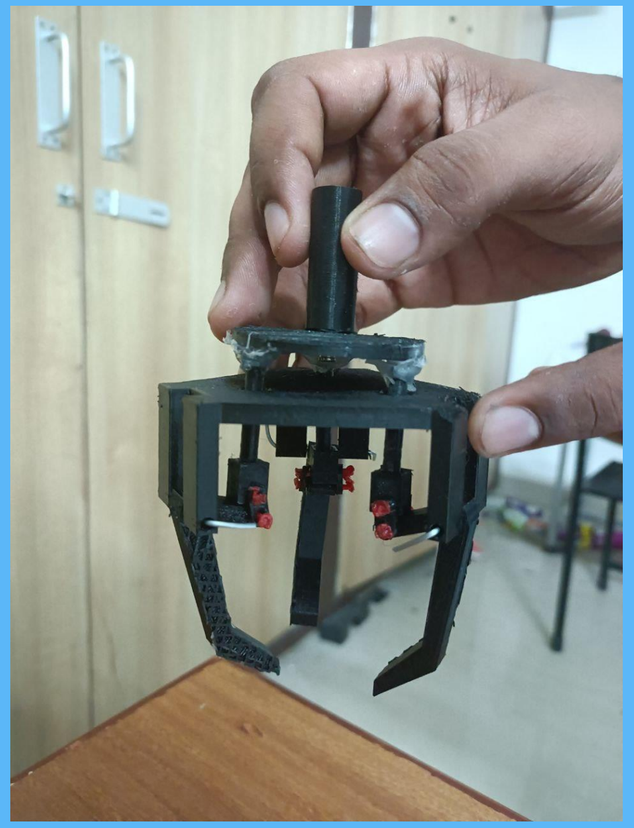
FUTURE SCOPE

An arrangement can be made to fix the gripper with actuator

On attaching the top of gripper to cylinder another arrangement is required to fit the fixed part of gripper with cylinder

The model can be scaled up

This model can be scaled up and can be used in relevant pick and place operation with robotic manipulators



Pneumatic actuator can be used to control the gripper

An pneumatic actuator can be attached with a scaled up version of this gripper and it can be controlled

Gripper end can be changed according to use

Rubber can be placed at end to increase the grip