

Practica

Reinventing the prosthetic hand

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CAD for Packaging Engineering

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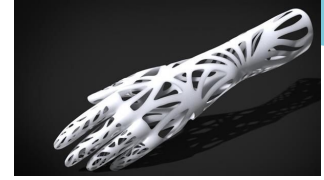
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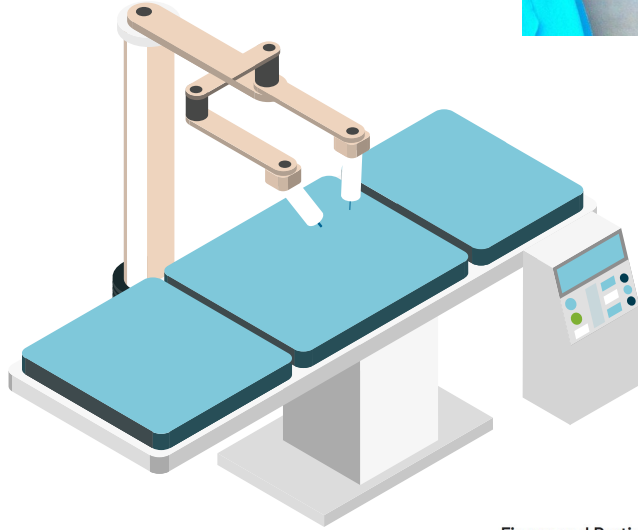
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BACKGROUND

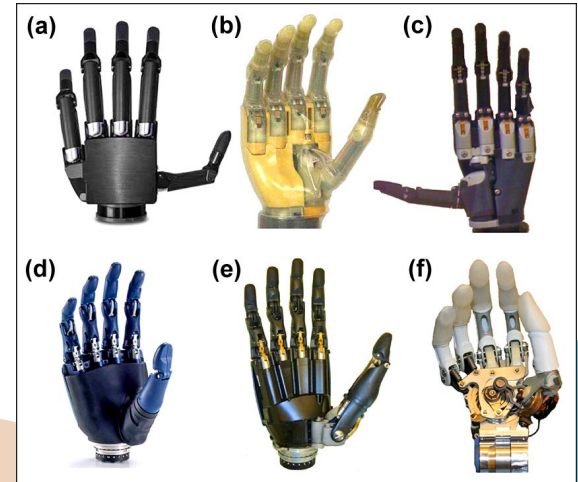


What's out there

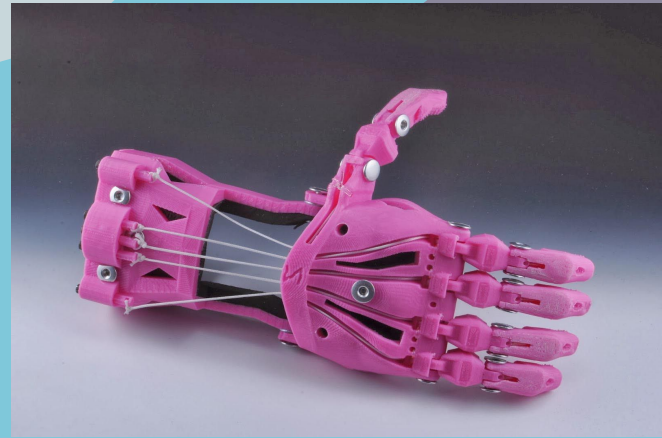
- Prosthetics for all parts of the body
- Hand prosthetics capable of grip
- Countless designs

Finger and Partial Hand Prosthetic Options

- No prosthesis.
- Passive prosthesis.
- Body-powered prosthesis.
- Electrically powered prosthesis.
- Activity-specific prosthesis.
- Hybrid prosthesis.



- **Traditional prosthetics cost \$1500 to \$8000**
- **3D printed prosthetics can cost \$50**



Why we picked the topic?

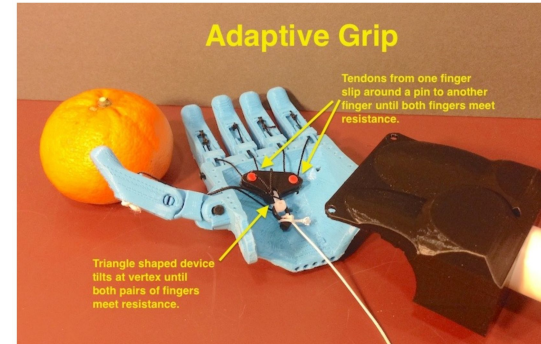
- Aim to make a cheap and basic use placeholder
- Gripping and typing capabilities
- Provide basic mobility to those without hands
- Offers increased flexibility with ball and socket joints

OBJECTIVE

Create a hand capable of grip and typing
on a keyboard
Simple and affordable

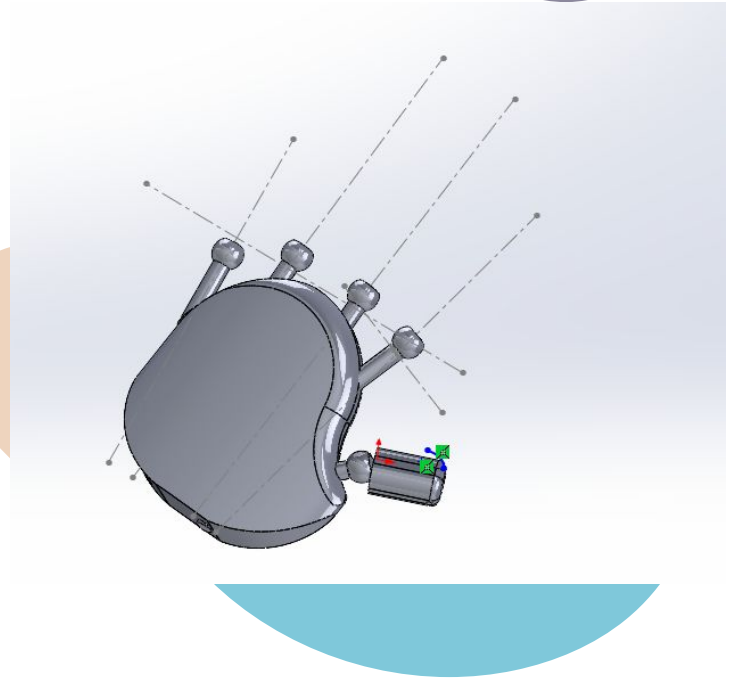
- Inspired by prosthetic limbs and 3D printing prosthetic devices
- We aim to create a beta design that can offer basic movement at a cheap price.

Limitation in pitch rotation
Aims to be cost effective and light weight
Uses little materials

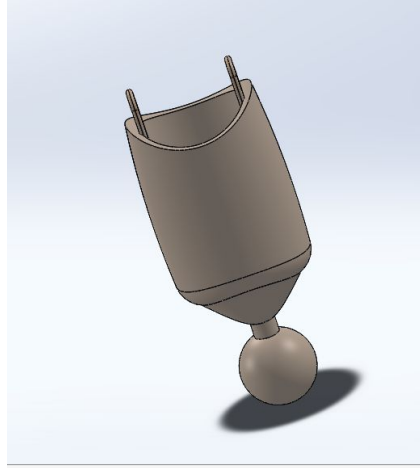
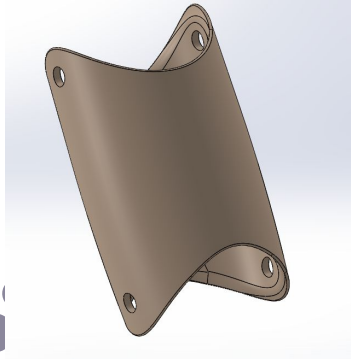


PALM

- **Boss Extrude + Extrude Cut for palm base**
- **Fillets for the palm**
- **Circular Extrusions**
- **Revolve boss**
- **Pin joints are affixed to the base**

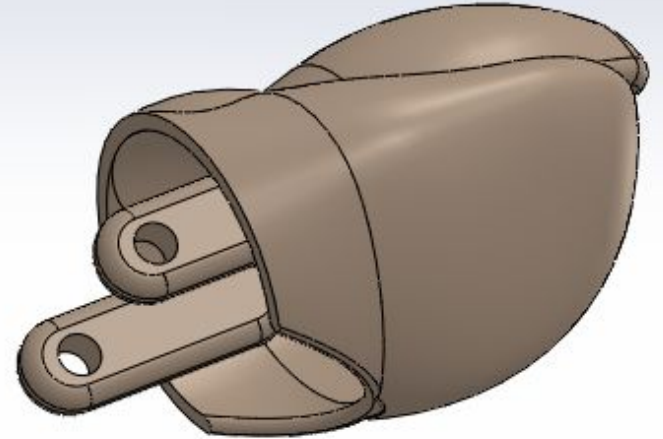


FINGER COMPONENTS



Proximal Phalanx:

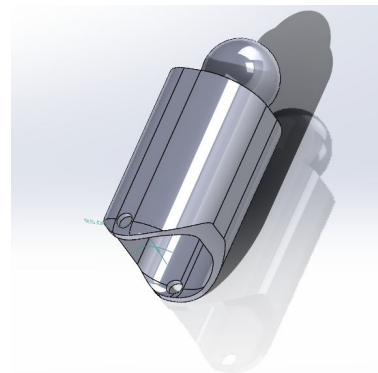
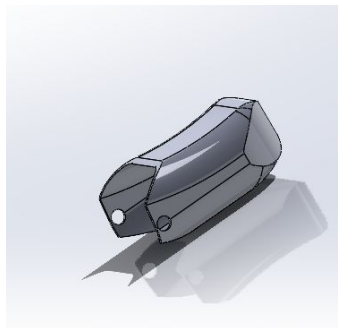
- Defined planes
- Cut Extrusions
- Mirrors
- Fillets
- Loft
- Surface Fill
- Boss Extrude



Finger tip:

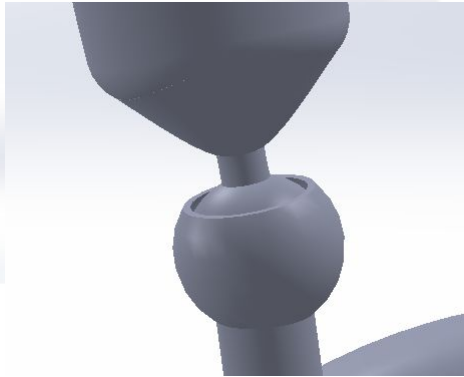
- Loft
- Revolved boss
- Fillet
- Shell
- Mirror

THUMB COMPONENTS

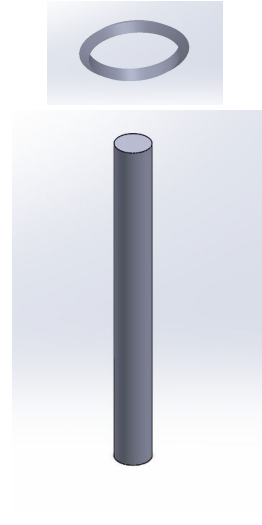
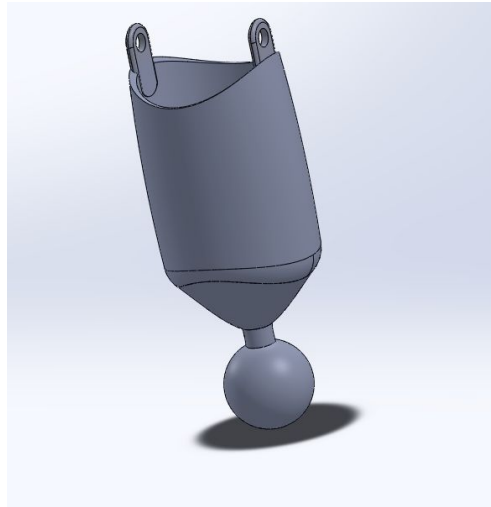


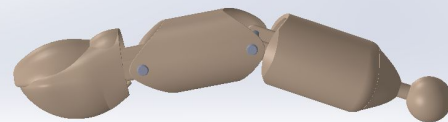
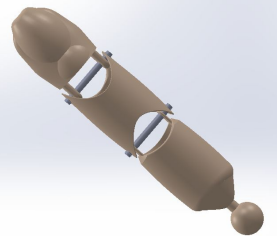
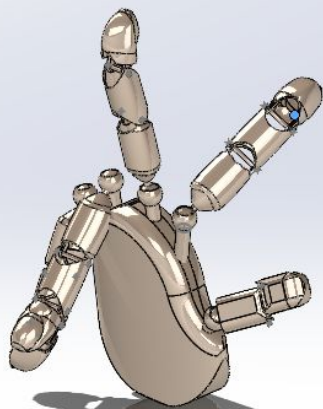
How it works

Ball and Socket Joint

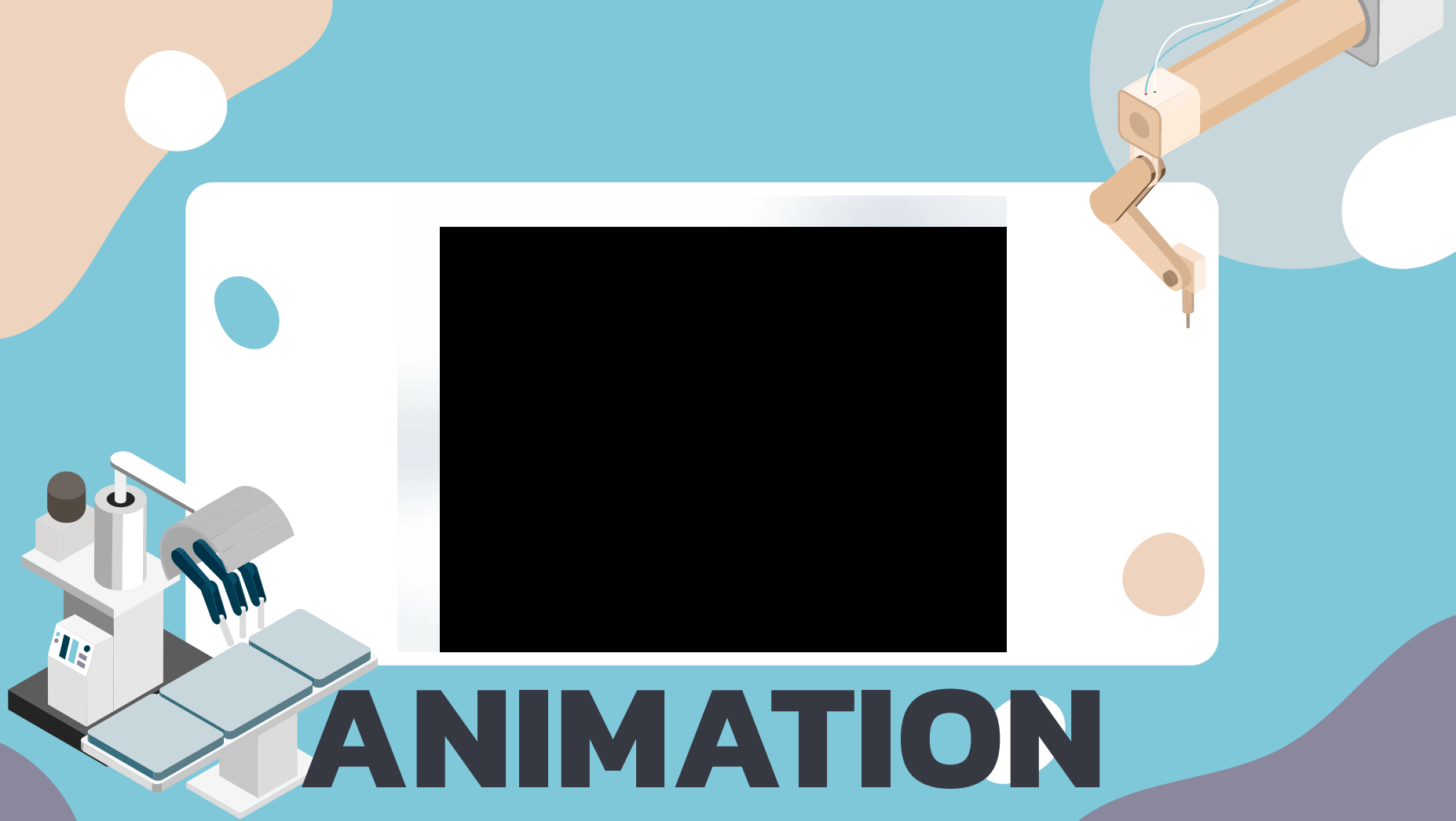


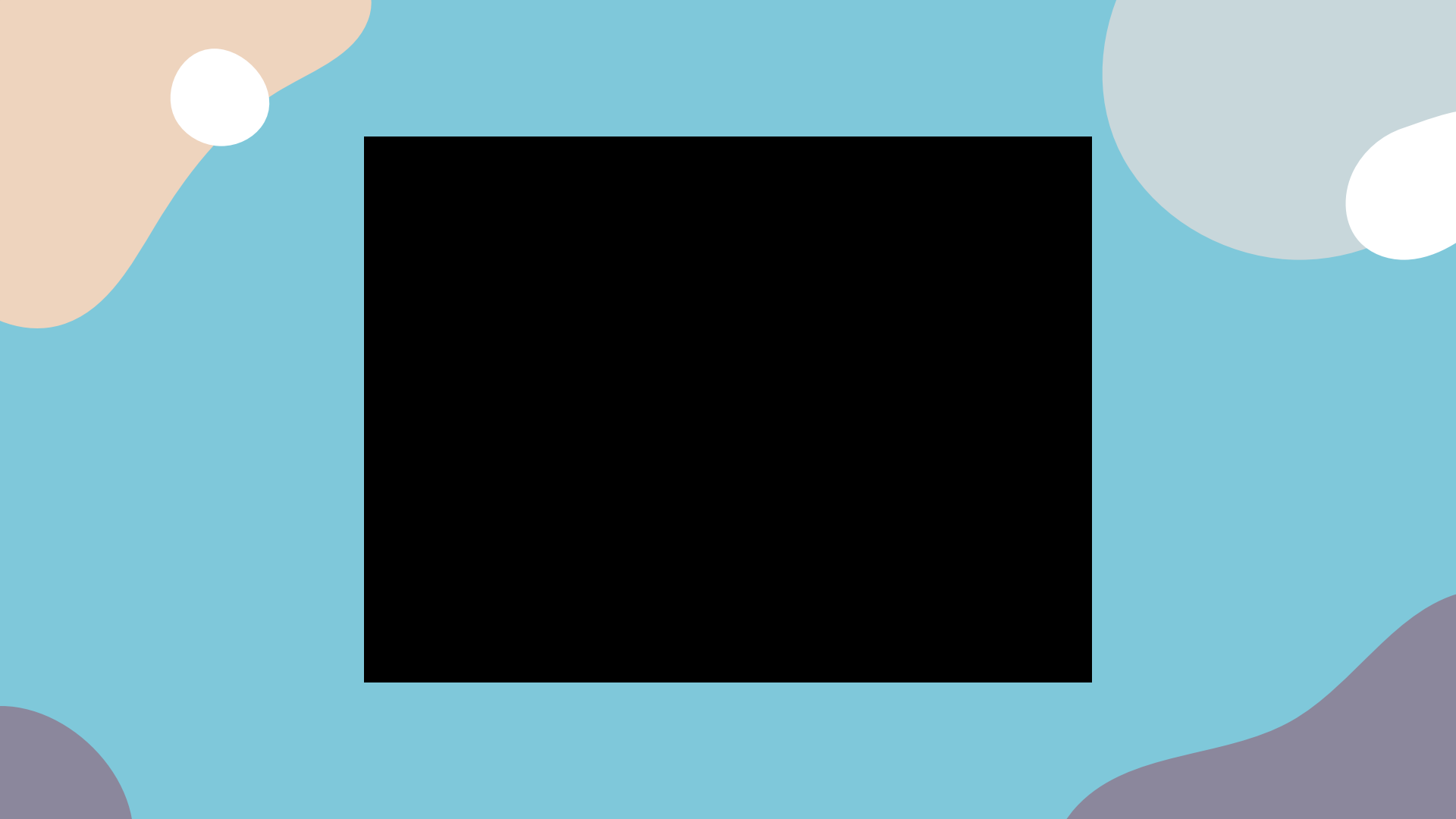
Pin Joint





ASSEMBLY





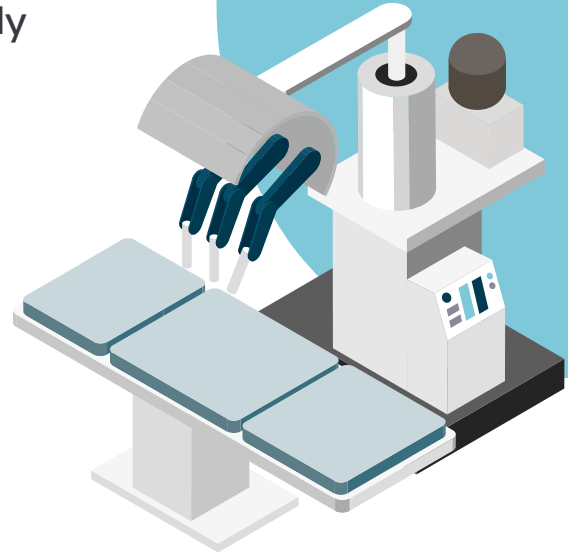
CONCLUSIONS

Throughout this project, we worked on already existing skills and built upon them. We worked with:

- Extrusions
- Mates
- boss revolves
- Fillets
- Animations

We also learned how to design from scratch and to take references from complex figures.

Given more time, we can learn more about materials and 3D printing to make a physical prototype. We could also rework aesth.etics and try to give it additional functionality.



REFERENCES

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- <https://www.globenewswire.com/en/news-release/2022/10/27/2542529/28124/en/Global-3D-Printed-Prosthetics-Market-Report-2022-Lower-Costs-Turnaround-Time-the-Capacity-for-Customisation-Driving-Adoption.html>

