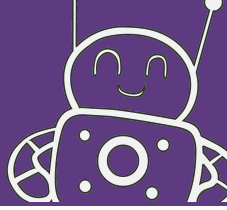


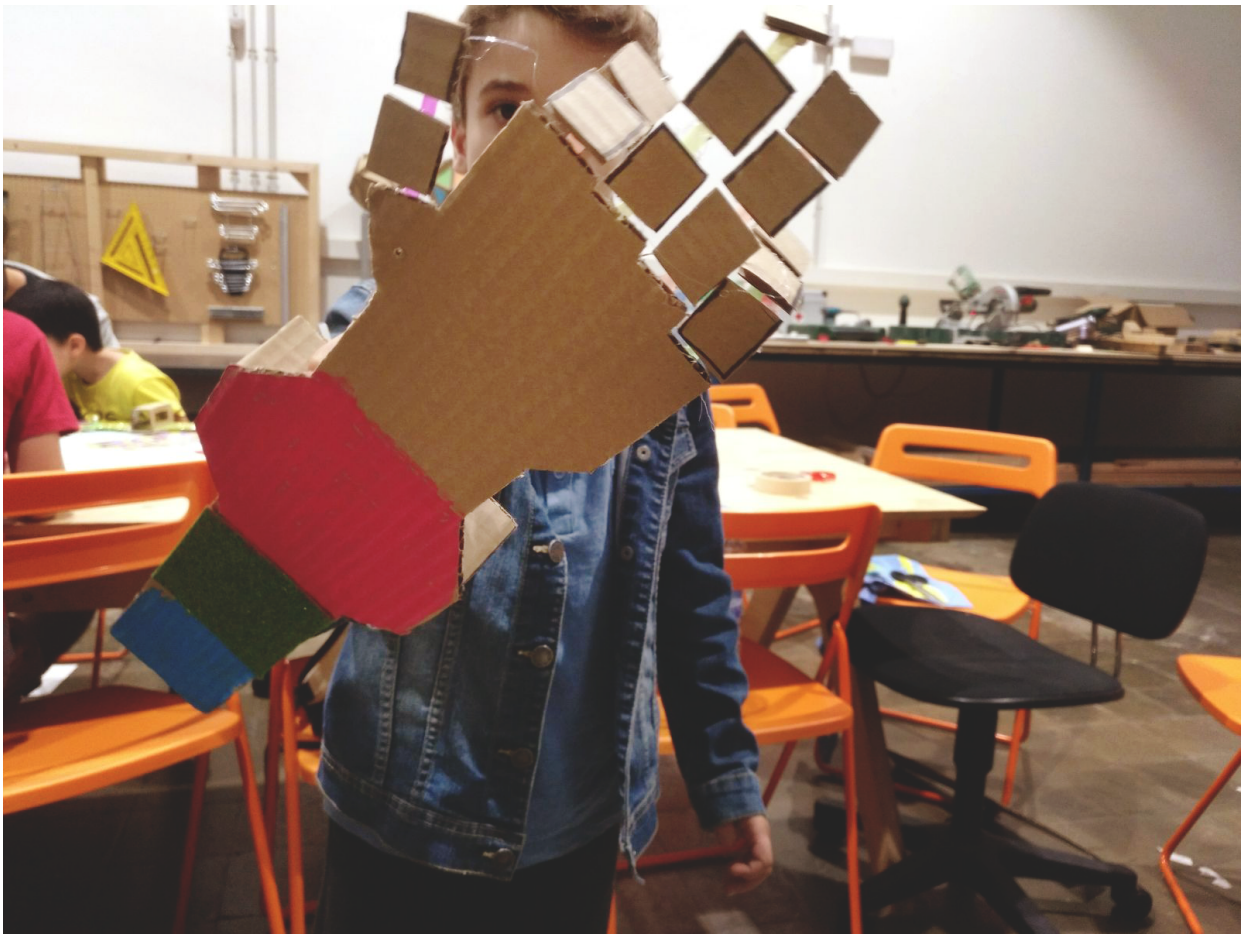
Robotics

Prosthetic Arm

Subtopic: Biomimicry / Mechanisms / Robotics

5 - 14 years

Duration: 90 minutes.
Number of participants: approx. 5 per monitor.
Approximate cost: without estimate.



Goal

Participants will build a prosthetic arm to understand the basic mechanism of human arm movements and how these can be mimicked to build a robotic arm. It will be discussed how in science and engineering nature is observed and understood to build artificial mechanisms that take advantage of the efficiency and intelligence of natural mechanisms.

Contents

1 Biomimicry – observing the intelligence behind mechanisms that can be observed in nature.

2 Teach and discuss examples from engineering, design, and robotics that mimic natural mechanisms with artificial mechanisms.

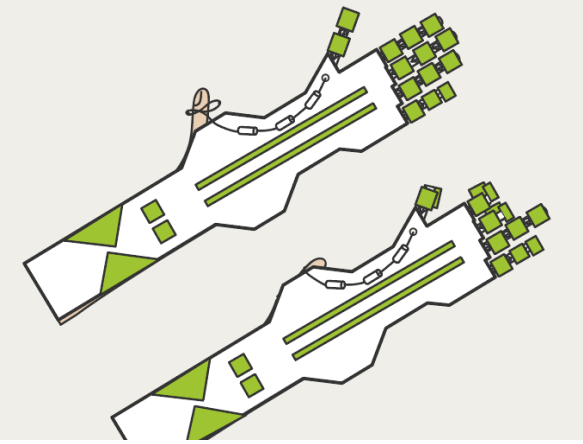
3 Anatomy of the human hand, what are the tendons, muscles, joints and ligaments? What function do they play to produce the contraction and extension of the hand and fingers?

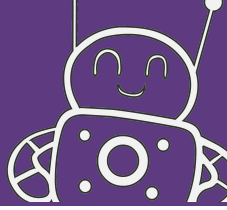
Presentation

https://drive.google.com/open?id=14BpOHk_quREX91Gz5ssEVcVjRJN7HRTtNi7tf6shJyg

Materials

- Paperboard
- Straws / drinking straws
- Silicone guns
- Bridles or moorings
- Nylon
- Cutter and scissors
- Velcro





Assembly instructions
https://drive.google.com/open?id=0B0YpYtPjjRcjUXBkakgxRTFVZzA

Referring
https://www.youtube.com/watch?v=c9FuPdl3xCE

Cut files
https://drive.google.com/open?id=0B0YpYtPjjRcjalQtbnBUZThoZjg