# Mechatronics for a Mobile Manipulator

## Quark Summer Technical Project, 2021

BITS Pilani, K.K. Birla Goa Campus

### Week 1

- Designing on CAD software
    - **Computer-aided design** (**CAD**) uses computers (or workstations) to create, modify, analyse, or optimise a structure. It is mainly used to increase the designer's productivity, improve design quality, improve communications through documentation, and create a database for manufacturing.
    - A complete model is to be made with a rough model in mind and implementing that on paper and using industrial standards dimension and materials; they are then modelled on the CAD software.
    - The complete model is being done primarily on fusion 360 for everyone to get the hang of it. A youtube video to know more about the software: Fusion 360 Tutorial for Absolute Beginners (2020)
- Mechanical Linkages:
    - A **mechanical linkage** is an assembly of bodies connected to manage forces and movement. The movement of a body, or link, is studied using geometry, so the link is considered rigid. The connections between links are modelled as providing ideal movement, pure rotation or sliding, and joints. A linkage modelled as a network of rigid links and perfect joints is called a kinematic chain.
- Tasks:
    - Reading : Basic models and their 3D linkages.
        - Learn the tactics of how to draw the models to 3D scale, making sure each joint is in perfect dimensions so that it doesn't get distorted when assembling those.
        - Once you start assembling those, make sure you study those linkages before assembling through joints (as to what purpose it should for you - like converting rotational to linear motion or other).
- Resources:
    - Learn about Fusion 360 completely here.
    - Learn about mechanical linkages here.