

# BENJAMIN LEE

MECHANICAL ENGINEERING AT THE UNIVERSITY OF BRITISH COLUMBIA



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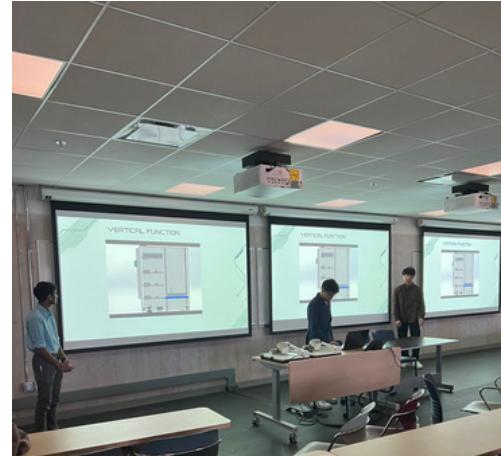
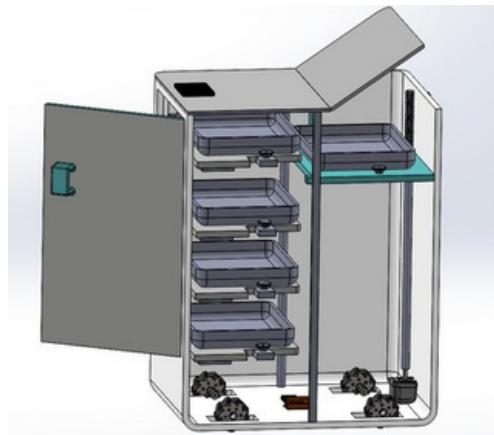
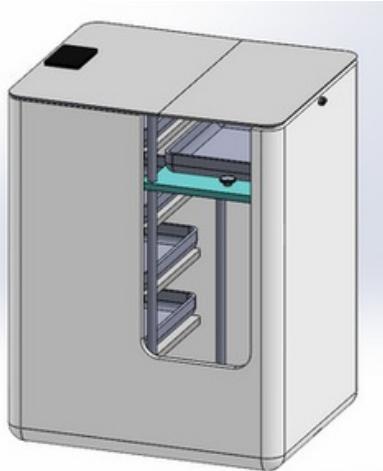


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## RESTAURANT ROBOT SERVER



### What?

- Designed a restaurant robot that automatically delivers food to customers
- Relies on sensors and motors to transport food from the kitchen to the customers

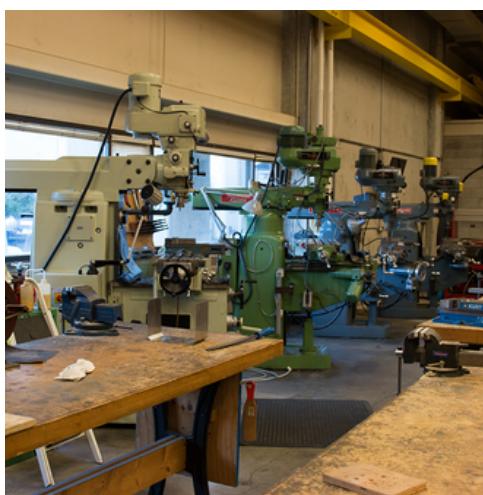
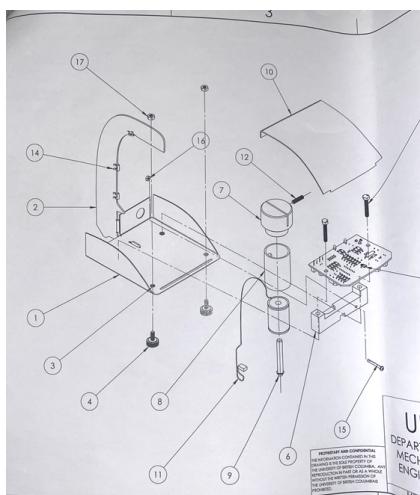
### How?

- Use **SolidWorks** to CAD and perform part analysis (**FEA**)
- Sourced electronics components necessary to function robot (Microcontroller, motors, actuators)

### Results

- Formally presented concept to a group of judges and received design feedback
- Strengthened skills in **Electromechanical design**, **FEA**, and part modelling

## MAGLEV: MAGNETIC LEVITATOR



### What?

- Fabricate a device that uses electromagnetism to lift an object
- Learn and develop understanding of engineering drawings

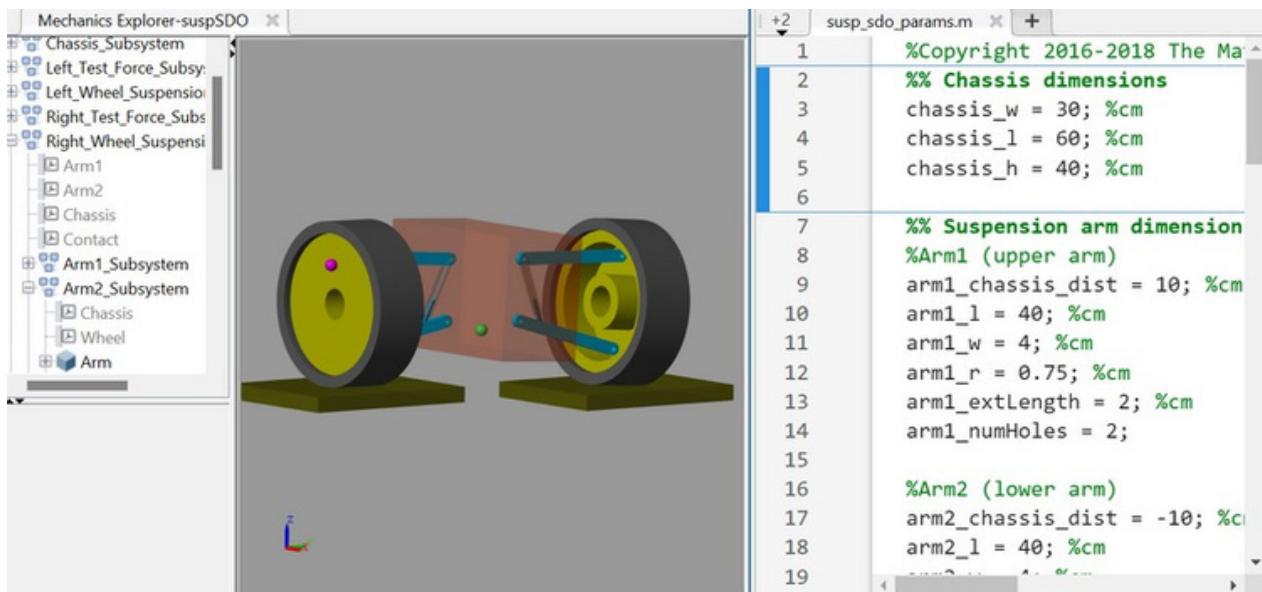
### How?

- Machined and assembled parts with **mill**, **lathe**, **spot welder**, **drill press**, etc.
- **Soldered** electric components onto PCB

### Results

- Design fulfilled its purpose with adjustability in levitation strength (to lift different objects)
- Learned **DFM** and **DFA** principles
- Familiarized self with **GD&T**

## VEHICLE SUSPENSION MODELLING



### What?

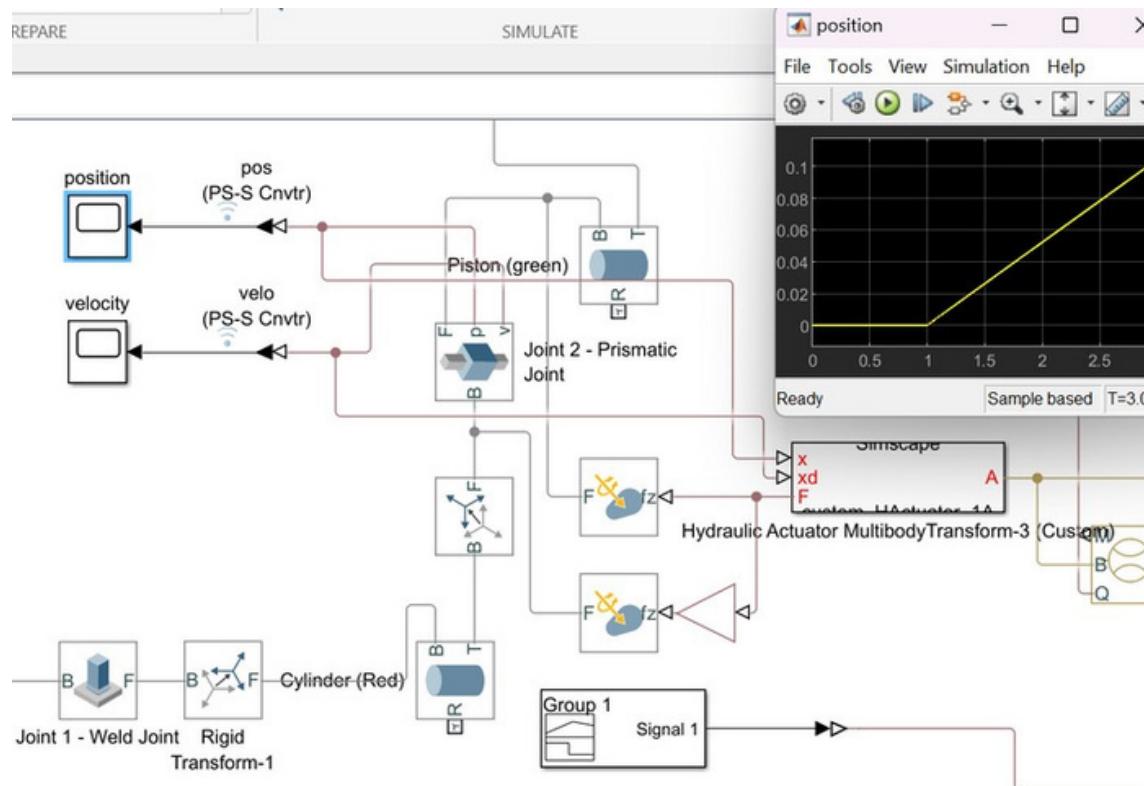
- MATLAB Simscape/Simulink model of car suspension
- Simple CAD models are used in this version, but more detailed geometry can be used for later versions

### How?

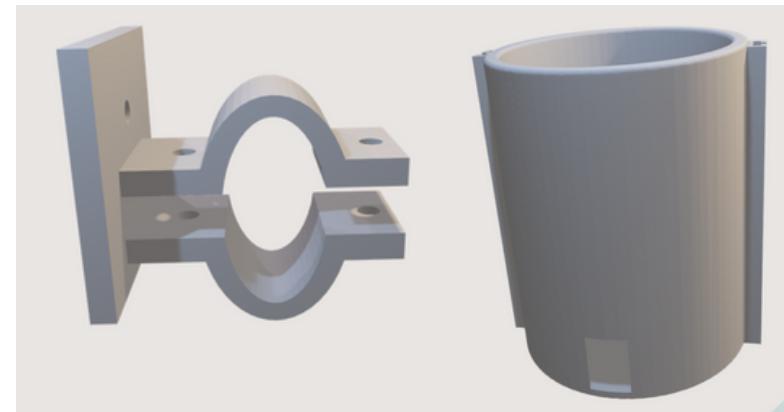
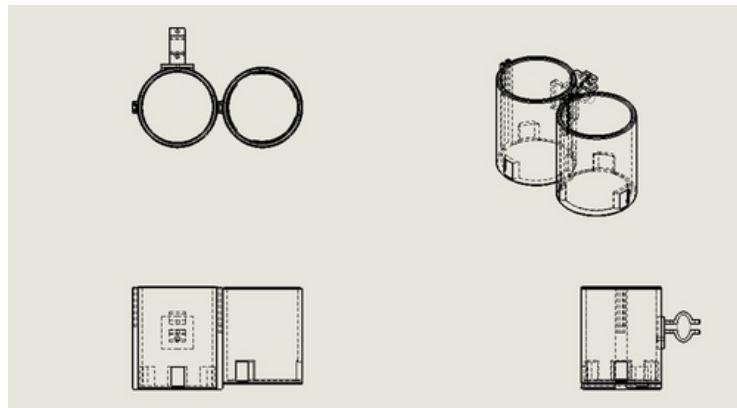
- Produced **3D CAD** models for assembly using **SolidWorks**
- Created **Block Diagrams** to create a simple model that shows suspension characteristics such as Roll Center and ICZV

### Results

- Gained experience in **SolidWorks**, **MATLAB programming**, and **Block diagram modeling**
- Model can be used to simulate suspension pressure, mass flow rate, displacement



## BABY STROLLER CUPHOLDER



### What?

- Custom-designed dual beverage cup holder that latches onto a baby stroller
- Provide an affordable and straightforward solution to the lack of beverage holders for strollers

### How?

- Connected with stakeholders to understand requirements and determine design constraints
- Produced **3D CAD** models and detailed **2D engineering drawings** for assembly using **Solidworks**

### Results

- Gained experience in **SolidWorks**, **3D printing**, and **technical documentation**
- Client was happy and uses the product daily

