BENJAMIN LEE

MECHANICAL ENGINEERING AT THE UNIVERSITY OF BRITISH COLUMBIA

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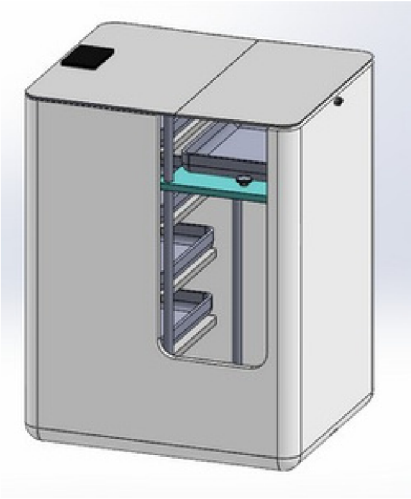
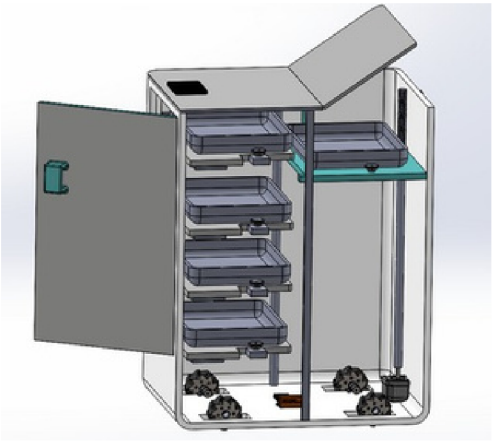
RESTAURANT ROBOT SERVER





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

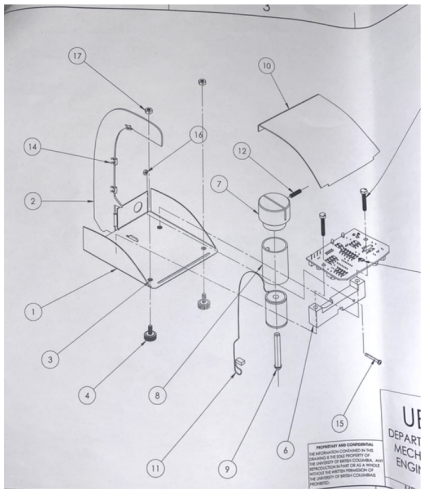
How?

- 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**

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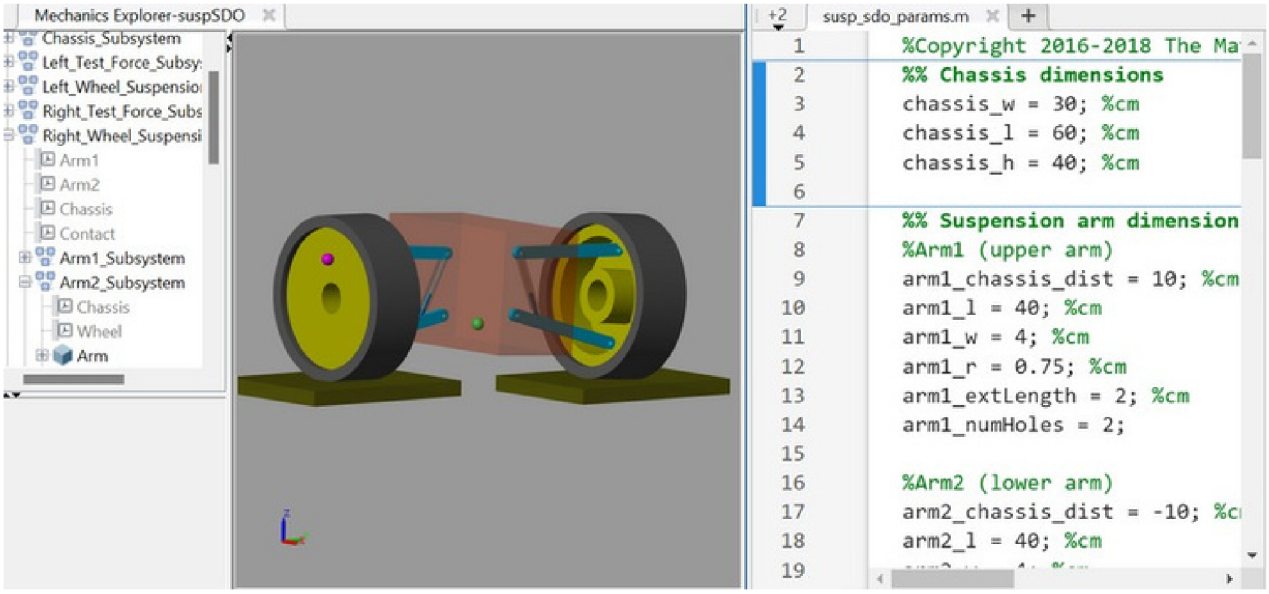
VEHICLE SUSPENSION MODELLING



What?

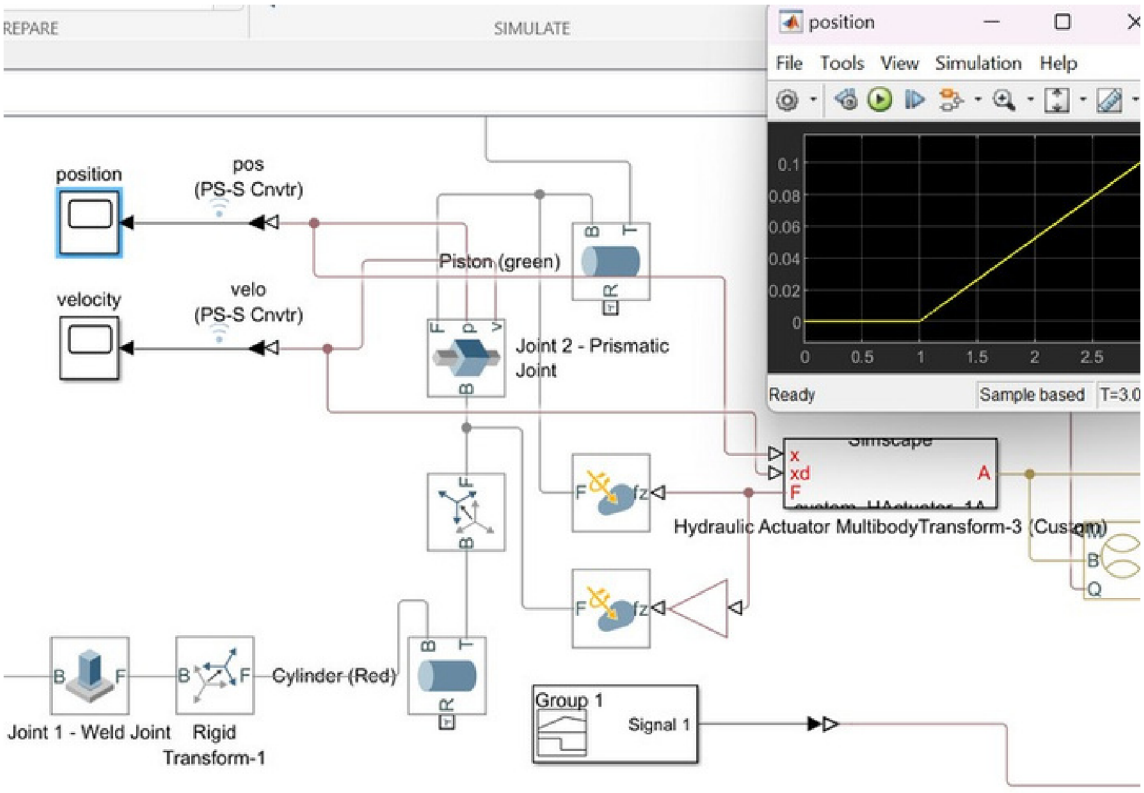
- **MATLAB Simscape/Simulink** model of car suspension
- Simple CAD models are used in this version, but more detailed geometry can be used for later versions

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



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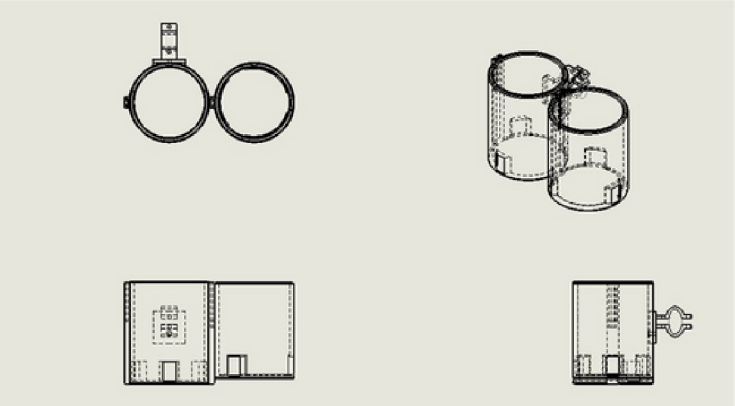
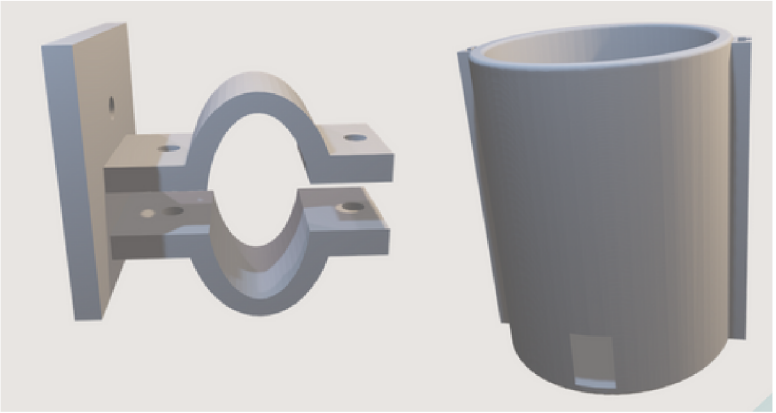
BABY STROLLER CUPHOLDER





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