

# ARVIND VINODH

MECHANICAL ENGINEERING AT THE UNIVERSITY OF WATERLOO



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## SKILLS

- 300 hours of **AutoCAD** and **SolidWorks**
- Basic knowledge of **Geometric Dimensioning and Tolerancing**
- Intermediate in **MS Office** (Word, PowerPoint, Excel)
- 2 years of experience with **Python** and **MySQL Relational Database**
- Beginner in **C++, Siemens NX, MATLAB, Git, HTML5**

## PROJECTS

### First Year Mechanical Engineering Toy Project September 2021-December 2021

- Collaborated with team members to design, prototype and present a toy at the symposium
- Designed the structural frame using **AutoCAD** which was later laser cutted
- Effectively programmed an **Arduino** in **C++** to detect when the toy is balanced
- Drafted a 22-page Mechanical Design Report as a team detailing all the aspects of the toy
- Exhibited project management and communication skills to organize meetings, set deadlines
- Resulted in our team being one of the few teams that had a fully working prototype

### Cell Phone Stand Project November 2021-December 2021

- Designed a cell phone stand using **SolidWorks** and 3D printed it
- Analyzed the structural integrity of the stand and made key observations of failure points
- Showcased possible modifications to strengthen the stand in a future iteration

### Reminder App June 2021-July 2021

- Developed in **Python**, this application helps to keep track of reminders
- Utilises text files to store user data for future retrieval since the scale of the project is not large
- Strengthened the understanding of using text files as a means of storing data

### Train Booking Service October 2020-December 2020

- Programmed a console application in **Python** that depicts a real-world scenario of booking services
- Extensive use of **MySQL Relational Database** for storing user information and train destinations
- Expanded my knowledge of Python-MySQL Connector and improved my structuring of different parts of a project

## EDUCATION

### University of Waterloo, Waterloo, ON September 2021-April 2026

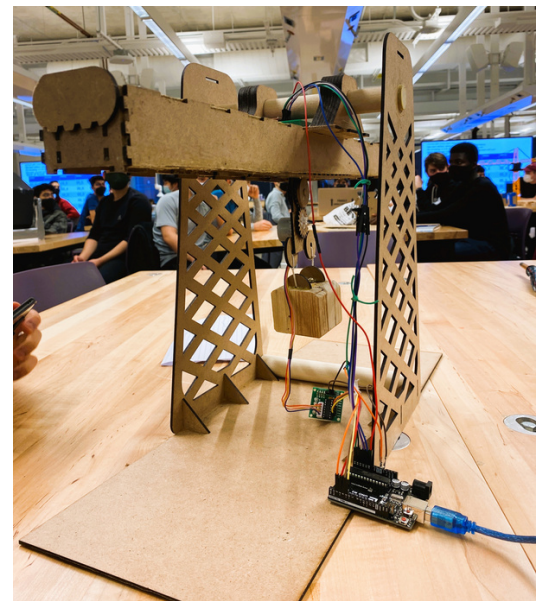
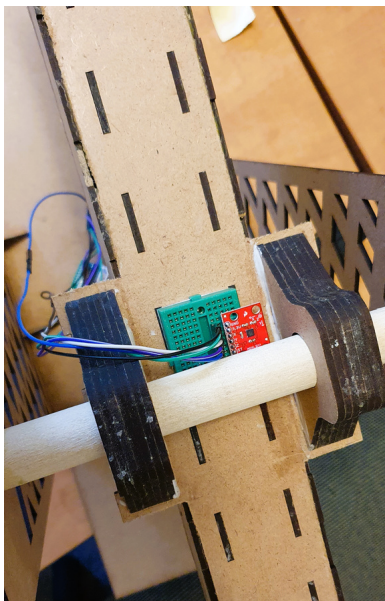
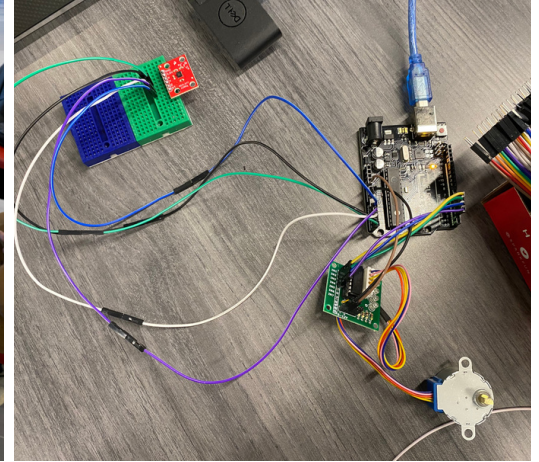
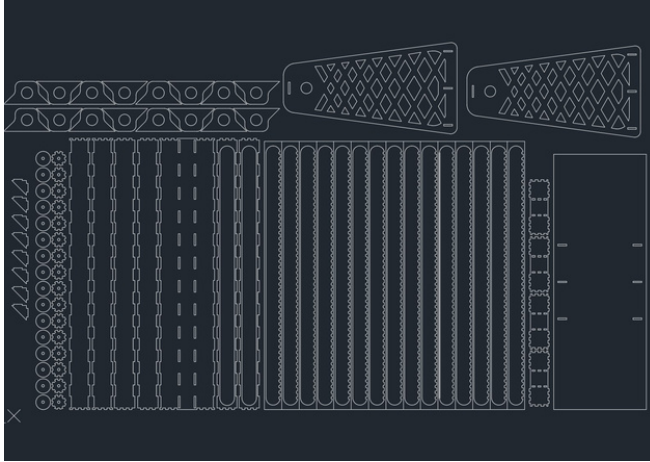
- Candidate for Bachelor of Applied Science, Honours Mechanical Engineering

## INTERESTS

- International Travel: Traveled to 10 international countries which gave an insight into different cultures around the world
- AvGeek: Collects a variety of airplane models ranging from A380s to B737s

Design portfolio from next page

## MONKE



### What?

- Design and prototype a toy whose main goal is to unbalance the beam, while the user constantly tries to balance it using pieces of wood



### How?

- Used **AutoCAD** to design the parts which were later laser cut
- Used **Arduino** to control servo motors and an accelerometer to check balance
- The monkey (woodblock) moves by a rack and pinion system

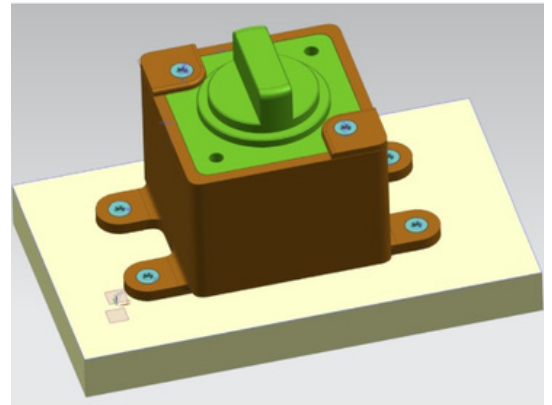
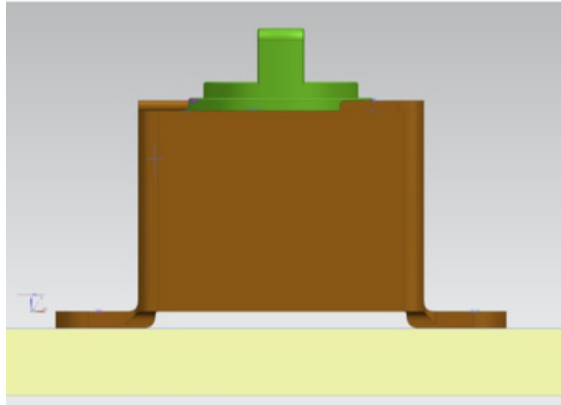
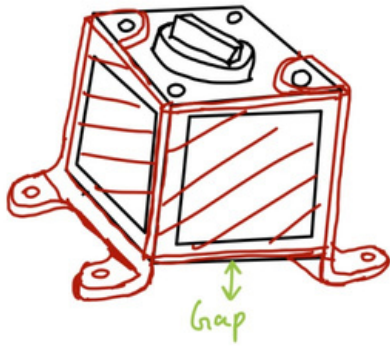
### Results

- The toy was a success resulting in our team being one of the few teams having a successfully completed prototype
- It can be further improved by implementing some cable management, using more powerful DC motors





## SWITCH MOUNT



### What?

- Being a University of Waterloo Alternative Fuels Team (UWAFT) member, I was asked to design a mount for a switch as part of a CAD challenge
- The mount must enclose the open panels
- Should be able to manufacture it in a cost efficient way.

### How?

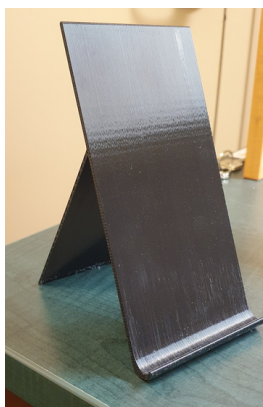
- Used **Siemens NX** to model the mount
- Suggested **3D printing** as the best way to manufacture this enclosure



### Results

- Provided a solution that offered good structural support while at the same time minimized screw usage
- The design was able to accommodate cable management and heating issues with the help of a unique spacing between the switch and the wall

## CELL PHONE STAND



### What?

- Design and 3D print a cell phone stand with efficiency as a top priority 

### How?

- Used **SolidWorks** to design the stand which was then converted to a 3D object for **3D printing**
- Used **GrabCAD Print** to calculate expected model and support material

### Results

- The final outcome looked exactly how it was designed
- Optimized 3D printing efficiency by orienting the stand such that it reduces the amount of support material needed while printing
- Adding another support structure would reduce deterioration of the support joint from continuous loads