

## Bio:

Richi is a second year Master's student in the Mechanical Engineering and Material Science Department at Duke. He works with Dr. Brian Mann's on the topic, the stability of buoyant bodies. Outside of the dynamics lab, he works at Co-Lab as an engineering consultant, assisting people at Duke with 3D printing or prototyping solutions.



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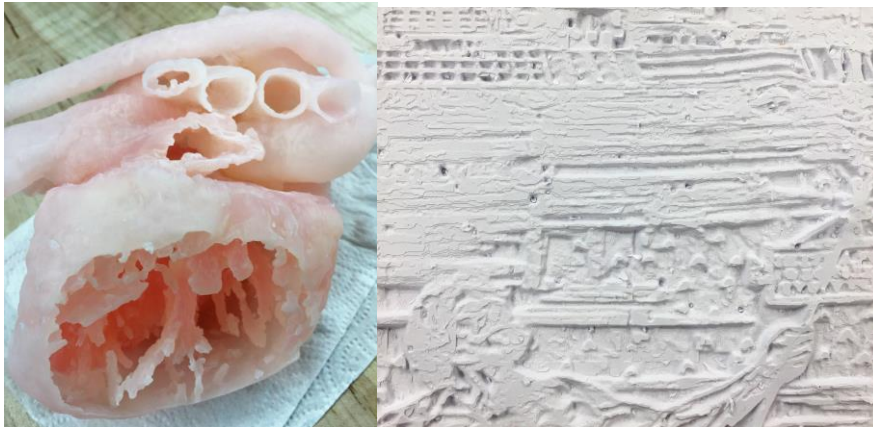
## Projects:

### Analysis of Paddle Board Stability

*Master's Thesis*

- Model the stability of a paddle board at static upward equilibrium considering the board size and human parameters.
- Develop a program with GUI interface analytically solving critical human parameters for a given board size using Mathematica and MATLAB.
- Conduct the vibration experiment with IMU sensors to verify analytical solutions.

### 2. Selected Bluesmith Cases





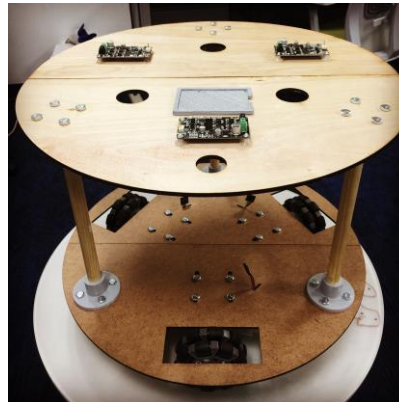
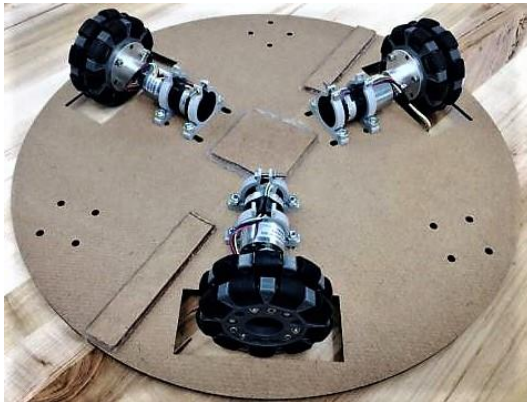
Pictures in sequence:

1. A flexible heart for a surgeon to prepare the surgical meeting and demonstration.
  2. One of the paper prints exhibited in Nasher Museum of Art for professors from Department of Art.
  3. A slightly flexible and translucent medical print for the doctors to deploy an endograft inside the print model.
- Advise different 3D printing solutions to non-engineering background costumers based on their CAD models and specific purposes of their prototypes.
  - Manage 3D printers: Stratasys J750, 3D Systems MJP3600, Formlabs Form 2, Mcor IRIS, Markforged Maker 2

### Indoor Activity Monitoring Robot (IamRobot)

*A Co-Lab granted robotic project*

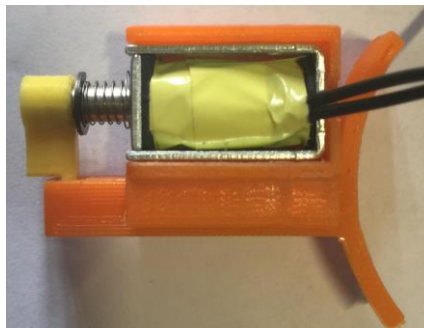
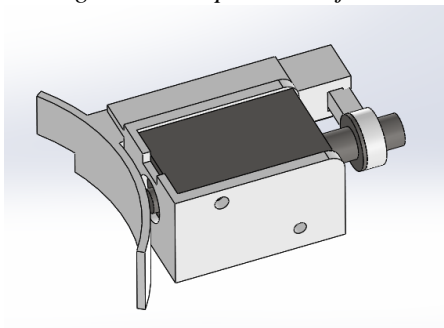
Link: <https://colab.duke.edu/projects/iamrobot>



- Fabricate the robot structure by using 3D printing and laser cutting technology.
- Integrate the microcontrollers and the motors on the laser cut wooden platforms.

### New Electric Lock Clutch System

*Undergraduate Capstone Project*



- Fulfilled lock clutch design requirements considering size, cost, and reliability
- Revised the new design with SolidWorks independently to meet Chinese product requirements.
- Verified the new design functionality with the 3D printed prototype.

**Skills:**

Mechanical Design

Mechanical Prototyping

Basic Mechatronics Design

Chinese

**CAD software:**

SolidWorks, Fusion 360