


NANDAN SESHADRI

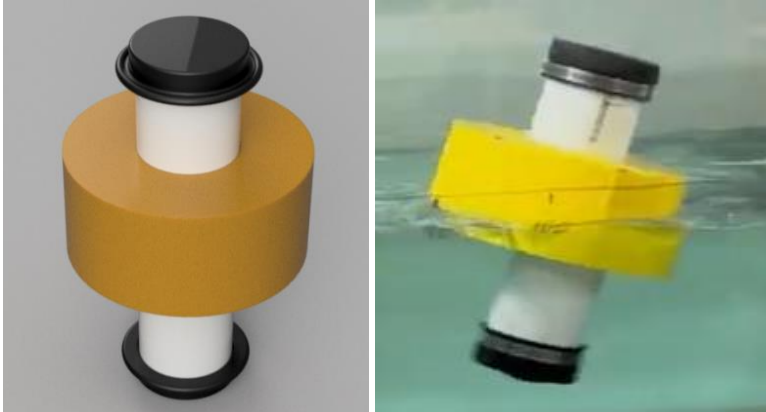
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DESIGN AND FABRICATION OF A WAVE DRIFTER (UCSD) - March'24



What?

- Designed and fabricated a **wave drifter** to measure ocean currents in a team of 5.

How?

- Used **Fusion 360** to design electronics enclosure and used **FDM printer** to 3D print parts.
- The design is made of PVC pipe and drain plugs with a Surlyn foam used to keep it afloat.
- Used **Arduino Mega**, **IMU** and **GPS** to track the position of the drifter when deployed in the ocean.

Results

- The design was proved robust when a teammate swam the drifter out past the surf zone and returned an hour later with everything fully intact.

HAPTIC BOXING GLOVE (UCSD) - March'23



What?

- Design and fabricated a **boxing glove simulator** that provides haptic feedback when interacting with the virtual environment in a team of 3.

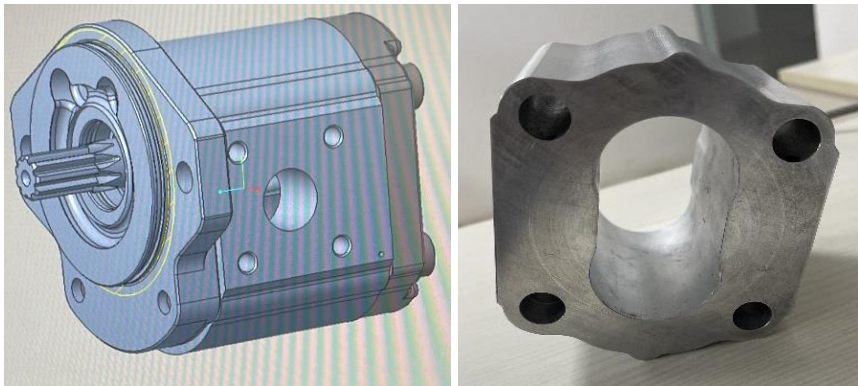
How?

- Used **SolidWorks** to design the components of device and 3D printed parts on a **FDM printer**.
- Used **Arduino Mega** and **motors with encoder** to control the position of device in real-time.
- Processing** was used to render and display a boxing glove and punching bag.

Results

- The final product works successfully and rendered gloves works perfectly when tested on **12** different users with various fist sizes.

DESIGN OPTIMIZATION OF GEAR PUMP (REXROTH BOSCH) - January'22



What?

- Optimize the design of a **gear pump** to reduce the material to make the pump cost effective and lightweight to reduce annual production cost.

How?


- Used **PTC Creo** to design 3 different pump housing prototypes pump and assemble it pump housing with various parts of the pump and applied **GD&T**.
- Used **FEA** to understand various fracture points of the pump.
- Tested the prototypes on a test bench for 100 hours to obtain the optimal design.

Results


- Implemented **DFM** principles to reduce overall part production cost by **\$1.2M** annually.

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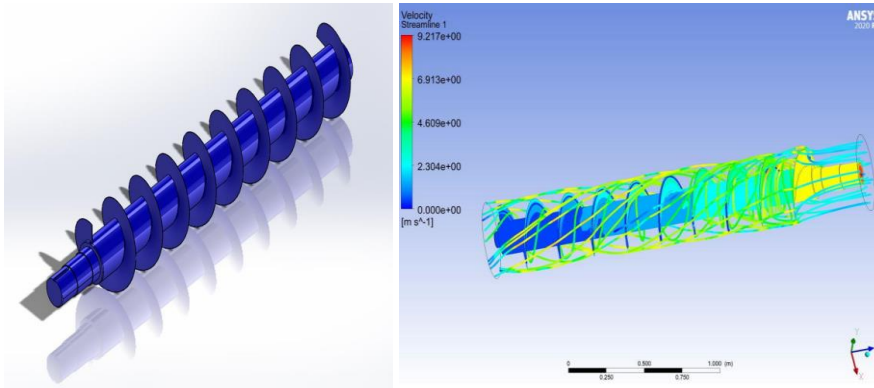
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VANE DESIGN OF A SPIRAL WATER TURBINE (VTU) – June'21



What?

- Design the **vanes** for a low-cost spiral water turbine to generate power for household applications in a team of 4.
- Simulated various flow velocities to understand the behavior of the vanes.

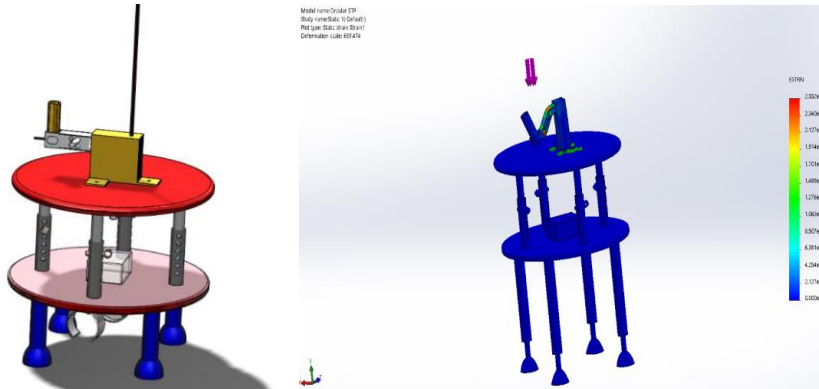
How?

- Designed the vanes on **Solidworks**.
- **ANSYS Fluent** was used to simulate the blades at various flow velocities.

Results

- The final design blade design was simulated at 15m/s, 20m/s, and 25m/s to visualize flow.

STATIC TEST PAD FOR ROCKET MOTOR (STAR) - December'20



What?

- Designed a **Rocket Motor Static Test Pad** for testing and acquiring the required data for the performance analysis of the high-powered rocket motors.

How?

- Designed the components of the test pad on **SolidWorks**.
- Used **FEA on SolidWorks** to realize the maximum load the test pad can handle.

Results

- The test pad can handle up to 150N which displays a good strength to weight ratio when simulated at various loads.
- The design is ergonomically good enough to be transported and reused at ease.