



NANDAN SESHADRI

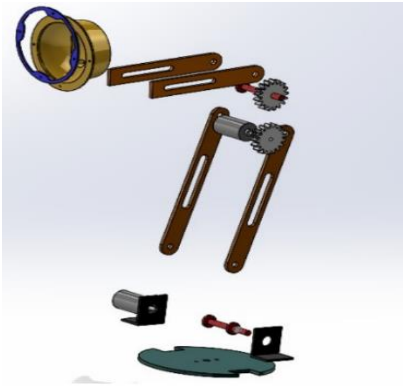
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HAPTIC BOXING GLOVE – UCSD



What?

- Design and fabricated a boxing glove simulator that provides haptic feedback when interacting with the virtual environment in team of 3.
- Implemented algorithms to control the position of device in real-time.

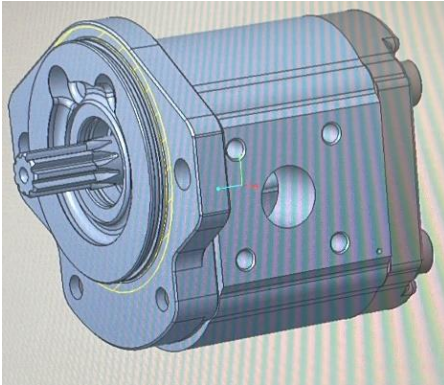
How?

- Used **SolidWorks** to design the components of device and applied **GD&T** on all the drawings.
- **Arduino IDE** was used to implement algorithms to control device.
- **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 HOUSING – REXROTH BOSCH



What?

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

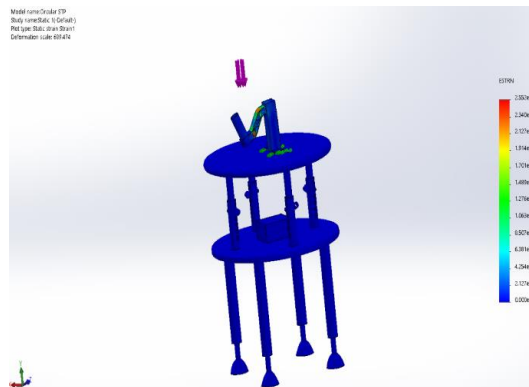
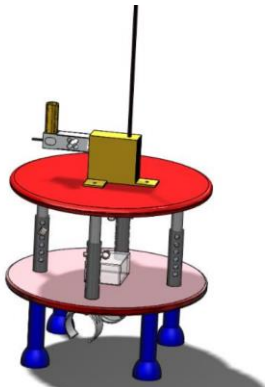
How?

- Used **PTC Creo** to design 3 different pump housing prototypes pump and assemble it pump housing with various parts of the pump.
- Use **FEA** to understand various fracture points of the pump.
- Test 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.

STATIC TEST PAD FOR ROCKET MOTOR - STAR



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.
- Tested the test pad to understand the behavior of the load cell against various loads.

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.
- The design is ergonomically good enough to transported and reused at ease.

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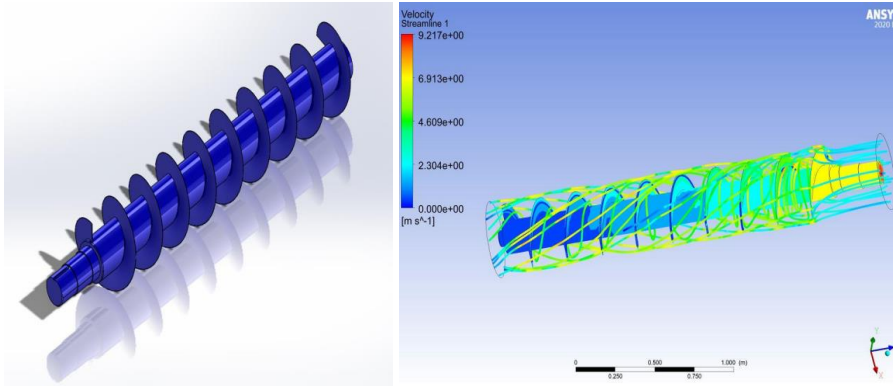
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VANE DESIGN OF A SPIRAL WATER TURBINE – VTU (CAPSTONE PROJECT)



What?

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

How?

- Designed the vanes on **Solidworks**.
- **ANSYS Fluent** was 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 the flow.