

Vishnu Rengaraj

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EDUCATION

University of Michigan, Ann Arbor, MI

M.S.E. Mechanical Engineering (GPA: 4.00/4.00)

September 2020 - April 2021

B.S.E. Mechanical Engineering (GPA: 3.83/4.00)

September 2016 - April 2020

↳ (Minor: Computer Science)

Coursework: Fracture Mechanics • Continuum Mechanics • Finite Element Method • Behaviors of Materials • Controls • Dynamics • Statics • Fluids • Heat Transfer • Thermodynamics • Machine Learning • Computer Vision • Data Structures and Algorithms • Robotics Lab

EXPERIENCE

SpaceX, Hawthorne, CA

June 2020 - August 2020

- Development Test Intern - design novel test equipment for quick and accurate aerospace qualification
- Successfully designed, manufactured, and tested 25 ft. long high pressure gas cannon for FAA bird strike testing
 - Created detailed fluids model in Python with fully modeled interactions based on flow fundamentals
 - Generated drawings (GD&T) + fluid schematics and worked with suppliers to manufacture cannon
 - Coordinated assembly of fluid system, DAQ, projectiles, and other critical infrastructure
- Designed and analyzed actuator assemblies on short timeline for critical path parts
- Documented and researched environmental testing and sorted conditions on importance

Tesla, Fremont, CA

May 2019 - August 2019

- Body Design Intern - design, validate, and manage structural body components through their lifecycle
- Implemented part reduction measures on Model S estimated to save \$30,000 yearly
- Introduced Model 3 rear tow solution to meet deflection, homologation, crash, and fascia requirements
- Redesigned rear crash structure on Model 3 to meet durability life requirements while maintaining manufacturability
- Supported Model Y launch by implementing manufacturing changes and developing FT&A (GD&T) for body components with tight timelines

PROJECTS

Michigan Baja SAE, Ann Arbor, MI

September 2016 - May 2020

- Testing & Validation Director, Suspension and Chassis Lead (2017-2020)
 - Collected testing data via strain gauges, rpm sensors, potentiometers, and accelerometers
 - Implemented implicit linear static and non-linear quasi-static simulations for stiffness and strain calculations
 - Introduced topology optimization reducing transmission rotational inertia by 30% and overall weight by ~8lbs
 - Simulated full vehicle crash with optimization via RADIOSS and OptiStruct to design safer roll cage
 - Validated simulations by conducted Instron testing and correlating results to simulations
 - Verified torsional stiffness with static analysis and real-world deflection tests

AWARDS

James B. Angell Scholar • Ford Vehicle Design Team Scholarship • FCA Student Achievement Scholarship • R&B Machine Tool Company Scholarship • William J. Branstrom Freshman Prize • FIRST Robotics Dean's List Finalist

SKILLS

HyperWorks/Ansys • OptiStruct/RADIOSS/Nastran/Abaqus • GD&T (FT&A) • Siemens NX/CATIA V5 • CNC Mill/Lathe C/C++/Python/MATLAB • PyTorch/TensorFlow/NumPy/OpenCV/SciPy