

Siva Appana

U.S. Citizen ● sappana2003@outlook.com ● (404) 940-1135 ● Open to Relocation ● Portfolio: siva-appana.github.io

Education

Bachelor of Science in Mechanical Engineering - Georgia Institute of Technology

Expected: Dec 2024

- GPA – 3.92/4.00, Minor in Computing and Intelligence (AI/ML)

Experience

SpaceX – Tower and Mount Engineer, Mountain View, CA

Jan 2025 – May 2025

- Will work on the “chopstick” arms on the pad’s tower that catches the Super Heavy first stage and Starship upper stage

NASA Ames Research Center – R&D Intern, Mountain View, CA

June 2023 – Aug 2023

- Redesigned frequently failing robot gripper mechanism on lattice-assembly robot to minimize sub-assembly’s energy usage by 93% and guarantee consistent engagement, mitigating risk of system damage and power consumption
- Performed fatigue failure investigations for rapidly prototyped plastic parts for 10,000 cycles, effective for mission duration
- Owned the mechanical design of a footing mechanism, published and presented at IEEE Aerospace Conf., for reconfigurable macro-metamaterials to eliminate cumbersome and expensive site preparation needs for construction on lunar surface
- Performed geometric optimizations using ANSYS FEA for parts modeled on Inventor, cutting 15% weight from systems

Georgia Tech Research Institute (GTRI) – Robotics Intern, Atlanta, GA

Jan 2022 – May 2022

- Designed end-effectors on SolidWorks for a UR5 robot arm integrating COTS pruning shears to automate pruning branches on trees, determining optimum fixtures and 3D-printed material for strength, stiffness, weight, and slim form factors
- Programmed and tested sensor layouts powered by Arduino, successfully complying with the tight alignment tolerance at prune points between branches
- Collaborated with interdisciplinary team to develop Python algorithms for tree-shaping and transforming UR5 robot arms

Leadership and Extracurriculars

Project Manager, Mechanical Training Lead, Builder – RoboJackets BattleBots

Aug 2021 – Present

- Directed 120 students through conceptualization, design, and construction of 8 combat robots as a servant leader
- Created a research division to obtain real-world data on high-speed spinning objects and advance manufacturing processes to improve simulation capabilities with realistic load values during simulation, still operating today
- Designed and 3D-modeled combat robots with parametric dimensioning and GD&T on Autodesk Inventor for manufacturing
- Performed FEA on ANSYS to simulate impacts and optimize part design features, which has not failed even after 7 fights
- Manufactured metal parts for robots using HAAS CNC mills, lathes, 3D-printers, and hand tools within tolerances
- Competed with robots at tournaments (i.e., Large Horizontal Undercutter won 3rd place at 2024 NHRL June event)

Teaching Assistant – ME 2110: Creative Decisions and Design

Aug 2022 – Present

- Taught and mentored over 300 students to use wood tooling, basic metal machining, 3D printers, and laser-cutters to rapid prototype autonomous robots powered by sensors, actuators, and pneumatics controlled by Arduinos
- Developed indestructible game elements for the ME 2110 competition using wood and 3D printing
- Won 1st Place in both Design and Competition Award, competing against 20 teams when taking the class

Undergraduate Researcher – Leamy Nonlinear Mechanics Lab

Aug 2024 - Present

- Designed and analyzed patentable variation of tuned mass damper using a geometric nonlinearity for wider frequency range

Undergraduate Researcher – Jariwala Advanced Stereolithography Lab

Aug 2022 – Aug 2024

- Co-authored two papers at SFF Symposium performing novel research developing a fluid-interface supported high resolution printer and a complementary photopolymerization COMSOL model, validated experimentally
- Identified two sources of part deformation through experimentation and improved part accuracy by a significant 6%

Build Director, Exam Writer – Science Olympiad @ Georgia Tech

Aug 2021 – May 2024

- Developed hardware for the state organization to assess high school students, serving over 1200 students state-wide
- Organized three state competitions and a nationwide invitational tournament for high school Science Olympiad

Virtual Reality Learning Tools (VizTools) – SICPEA Design Competition

July 2022 – Apr 2023

- Led and presented the proposed solution and a proof of concept for virtual reality visualization tools developed using python to the Dean of Engineering and won 1st place in the competition against more than 30 teams to win \$3000

SKILLS:

Selected Coursework:	Mechatronics, Robotics, Nonlinear Systems, Machine Design, Heat Transfer, Machine Learning
Manufacturing:	Drawings/Drafting, GD&T, DFMA, Tolerance Analysis, Injection Molding, Stamping
Prototyping:	CNC Machining (Mill, Lathe, Waterjet), 3D Printing (FDM, SLA, SLS), Soldering, PCB, Laser Cutting
CAD / Modeling / Design:	SolidWorks, Autodesk Inventor/Fusion360, Rhino, FEA (ANSYS, COMSOL), KiCAD
Programming / Software:	MATLAB & Simulink, C, Python, Java, LabVIEW, Mathematica, Maple