

Siva Appana

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Education

Master of Science in Mechanical Engineering - Georgia Institute of Technology	<i>Expected: Dec 2025</i>
• GPA – 4.00/4.00	
Bachelor of Science in Mechanical Engineering - Georgia Institute of Technology	<i>Expected: Dec 2024</i>
• GPA – 3.93/4.00, Minor in Computing and Intelligence (AI/ML)	

Experience

NASA Ames Research Center – R&D Intern , Mountain View, CA	<i>June 2023 – Aug 2023</i>
<ul style="list-style-type: none">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 consumptionPerformed fatigue failure investigations for rapidly prototyped plastic parts for 10,000 cycles, effective for mission durationOwned 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 surfacePerformed geometric optimizations using ANSYS FEA for parts modeled on Inventor, cutting 15% weight from systems	
Georgia Tech Research Institute (GTRI) – Robotics Intern , Atlanta, GA	<i>Jan 2022 – May 2022</i>
<ul style="list-style-type: none">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 factorsProgrammed and tested sensor layouts powered by Arduino, successfully complying with the tight alignment tolerance at prune points between branchesCollaborated with interdisciplinary team to develop Python algorithms for tree-shaping and transforming robot arms	

Leadership and Extracurriculars

Project Manager, Mechanical Training Lead, Builder – RoboJackets BattleBots	<i>Aug 2021 – Present</i>
<ul style="list-style-type: none">Directed 120 students through conceptualization, design, and construction of 8 combat robots through servant leadershipCreated a research division to obtain real-world data on spinning objects and advance manufacturing processes to improve simulation capabilities with realistic load values during simulation and is still operating todayDesigned and 3D-modeled combat robots with parametric dimensioning and GD&T on Autodesk Inventor for manufacturingPerformed FEA on ANSYS to simulate impacts and validate part design features, which has not failed even after 7 fightsManufactured metal parts for robots using HAAS CNC mills, lathes, 3D-printers, and hand tools within tolerancesCompeted with robots at tournaments: Large Horizontal Undercutter won 3rd place at 2024 NHRL June event	
Teaching Assistant – ME 2110: Creative Decisions and Design	<i>Aug 2022 – Present</i>
<ul style="list-style-type: none">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 ArduinosDeveloped indestructible game elements for the ME 2110 competition using wood and 3D printingWon 1st Place in both Design and Competition Award, competing against 20 teams when taking the class.	
Undergraduate Researcher – Leamy Nonlinear Mechanics Lab	<i>Aug 2024 - Present</i>
<ul style="list-style-type: none">Designed and analyzed patentable variation of tuned mass damper using a geometric nonlinearity for tunable frequency	
Undergraduate Researcher – Jariwala Advanced Stereolithography Lab	<i>Aug 2022 – Aug 2024</i>
<ul style="list-style-type: none">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 experimentallyIdentified two sources of part deformation through experimentation and improved part accuracy by a significant 6%	
Build Director, Exam Writer – Science Olympiad @ Georgia Tech	<i>Aug 2021 – May 2024</i>
<ul style="list-style-type: none">Developed hardware for the state organization to assess high school students, serving over 1200 students state-wide	
Virtual Reality Learning Tools (VizTools) – SICPEA Design Competition	<i>July 2022 – Apr 2023</i>
<ul style="list-style-type: none">Led my team to develop a virtual reality visualization solution to promote equity and access in the college communityPresented the proposed solution and a proof of concept 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, C, Python, Java, LabVIEW, Mathematica, Maple