Siva Appana

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EDUCATION:

Georgia Institute of Technology, *Atlanta, GA* *Expected: Dec. 2024*

- Candidate for B.S. in Mechanical Engineering, Minor in Computing-Intelligence: **GPA: 3.93/4.00**

EXPERIENCE:

NASA Ames Research Center, *Mountain View, CA* *June – August 2023*
Mechanical Engineering Intern: Robotics and Structures Engineering

- Designed and prototyped novel attachments and gripper mechanisms for lattice-traversing and macro-metamaterial structure-building robots in the ARMADAS project using cost-effective McMaster parts.
- Outlined and directed the development for footing mechanisms to uniformly distribute loads at structural nodes and eliminate necessary surface preparation during construction.
- Developed numerous design constraints and modeled/dynamically simulated designs on Autodesk Inventor.
- Performed thermal analyses on ANSYS and prototyped low-tolerance parts using 3D-printers and laser-cut parts.
- Published and presented the selected and optimized telescoping footer system at IEEE Aerospace Conference.

Georgia Tech Research Institute (GTRI), *Atlanta, GA* *January – May 2022*
Engineering Research Intern: Robotics Engineering

- Modeled end-effectors on SolidWorks for a UR5 robot arm integrating commercial pruning shears, and prototyped models using various 3D-printing filaments to meet design requirements for automating the pruning process of trees.
- Tested and programmed limit sensor layouts with Arduino to align shears at prune points with high error tolerance.
- Conducted system level testing to assess functionality with real trees, and tuned robot control parameters.

ACADEMIC EXPERIENCE:

ME 2110: Creative Decisions and Design, *Atlanta, GA* *August 2022 – Present*
Teaching Assistant

- 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.
- Designed 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.

PROJECTS:

RoboJackets Combat Robotics, *Atlanta, GA* *August 2021 – Present*
Project Manager, Builder, Mechanical Trainer

- Directed 120 students through conceptualization, design, and construction of 8 combat robots.
- Started a research division to characterize shock loads and manufacturing techniques.
- Designed and 3D-modeled using parametric dimensioning in Autodesk Inventor.
- Used FEA in Autodesk Inventor to simulate impacts and validate design choices.
- Manufactured metal parts for robots using CNC mills, lathes, 3D-printers, and hand tools
- Competed with robots at tournaments: Shuffling Shell Spinner won 1st place at 2024 NHRL April event, Large Horizontal Undercutter won 3rd place at 2024 NHRL June event

ME 4012: Modeling and Control of Motion Systems, *Atlanta, GA* *August – December 2023*

- Executed a project to balance an unstable triangle with significant nonlinearities on its vertex.
- Designed a system containing a powerful motor and analytically modeled the system for control.
- Implemented an IMU and ESC using UART protocol on a Teensy MCU programmed with C.

Virtual Reality Learning Tools (VizTools), *Atlanta, GA* *July 2022 – April 2023*

- Led my team to develop a virtual reality visualization solution to promote equity and access in the college community.
- Presented the proposed solution and a proof of concept developed using python to the Dean of Engineering and won 1st place in the competition to win $3000.

SKILLS:

Selected Coursework:	Mechatronics, Robotics, Nonlinear Systems, Machine Design, Machine Learning
Concepts:	Design for Manufacturing, GD&T, Technical Drawings, Finite Element Analysis (FEA), Hardware Testing, Circuit Design, Embedded C Programming
Manufacturing:	CNC, Mills, Lathes, Waterjet, Laser Cutters, 3D Printers
CAD / Modeling:	SolidWorks, Autodesk Inventor/Fusion360, ANSYS, COMSOL, KiCAD
Programming and Software:	MATLAB, C, Python, Java, LabVIEW, Mathematica, Maple