

Athul Krishnan

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EDUCATION

University of California, Berkeley

GPA: 3.99/4.00

Mechanical Engineering, B.S. & Electrical Engineering and Computer Science, B.S.

Aug 2022 - Expected May 2026

Relevant Coursework: Linear Algebra/Differential Equations[†], Circuits/Controls (EECS)[†], Intro to Programming (MATLAB)[†], Dynamics (Engineering Mechanics)[†], Data Structures (Java)[†], Dynamic Systems & Feedback (ME Controls, MATLAB/Simulink)[†], Solid Mechanics, Thermodynamics, Computer Architecture (C, RISC-V), Artificial Intelligence, Advanced Algorithms, Combinatorial Algorithms & Data Structures (Graduate), Mechanical Behavior of Materials

([†] = A+)

EXPERIENCE

Tesla

Palo Alto, CA

High Voltage Distribution Intern

May 2024 – Aug 2024

- Led and owned thermal improvement effort on Model 3/Y Chargeports, improving thermistor thermal deviation by 8000%
- Designed XYZ fixture (CATIA) for endpoint testing busbars under 500lb load; allows in house connector displacement testing

Formula SAE Electric @ Berkeley (Electric Formula Race Car Team)

Berkeley, CA

Dynamics Lead

Sep. 2023 – Present

- Currently leading team of 12 to research, design, optimize, and manufacture suspension and steering systems on the car.
- Owned, designed, and validated all four wheel uprights that interface the wheel assemblies with car's suspension
- Used FEA for over 25% weight reduction compared to previous year's uprights
- Used tolerance stackups & GD&T to make upright manufacturing drawings & ensure dimensional accuracy for minimized cost

Hybrid Robotics Lab

Berkeley, CA

Undergraduate Research Assistant

Feb. 2023 - May 2024

- Developing a quadrupedal robot (robot dog) to demonstrate the effectiveness of custom gearboxes in robotics applications
- Designing and implementing a robotic arm to attach to existing quadruped robots, and researching its effectiveness and utility
- Currently owning redesign of entire robot; designing novel mechanisms such as actively dampened ankle joints & in-motor cycloidal gearboxes, as well as optimizing packaging, over 80% torso structure weight reduction, etc.
- Using ROS and RViz on Linux to simulate and model robot motion/kinematics

Engineering Solutions @ Berkeley

Berkeley, CA

Senior Engineer

Feb. 2023 – May 2024

- Led technical development of a large scale (8' x 8') cable robot gantry system; delegated tasks and enforced rigorous CAD (OnShape) and validation practices (every single custom part underwent dedicated FEA with justified FoS requirements)
- Personally created in-depth thermal simulations in MATLAB to model air temperature distribution throughout a drone hive over time; designed to be user adjustable & expandable using modularity: modifiable heat sources, sinks, environments etc.
- Developed a small pasteurization chamber for growing mushrooms for *Forbes 30-Under-30* startup Hedgehog Foods; incorporates actively controlled temperature & oxygen levels to scale pasteurization down significantly & cut costs

UC Berkeley Electrical Engineering & Computer Science Department

Berkeley, CA

EECS16A - Controls/Linear Algebra - UCS2/Content TA (Course Staff)

Jun. 2023 – Present

- Holding office hours and helping students one-on-one & in groups with homework, discussion, and conceptual questions
- Assisting in developing course materials, such as writing exam questions and homework
- Previously on course staff for CS61B (Data Structures & Algorithms), EECS16B (Circuits, Robotics & Controls), and CS61C (Computer Architecture)

PROJECTS

Robot Design Projects

- Self Driving RC Car* (IP)** - fully self-designed RC car powered by Jetson Nano with autonomous path planning
- Rubik's Cube Solving Robot** - Uses stepper motors, 3D-printed parts, and Arduino to solve a Rubik's cube in 3 seconds
- 4WD 4 Motor Differential Crab Drive** - uses two differential power-take-off gearboxes that variably shift power between orientation and rotation of wheels, free XY translation and rotation
- CADathon Robots** - Multiple robots designed in about a week each, incorporate complex mechanisms such as 3-input 3-output differential PTO systems, adjustable height suspension drivetrains, etc.

EECS Projects

- BYOW** - Created a 16-bit dungeon-crawler game with pathfinding enemies and random world generation, entirely in Java
- RISC-V CPU** - Circuit layout for Reduced Instruction Set Computer, can run programs using the full RISC-V instruction set
- Traveling Salesperson Approximation** - Built TSP approximation algorithm improving on Christofides' Algorithm from a guaranteed 3/2 to an average $\approx 5/4$ approximation; ranked 1/100+ submissions

TECHNICAL SKILLS

CAD/CAM/Simulation (6 years): Onshape, Solidworks, Fusion 360, Ansys, CATIA V5/V6

Manufacturing (6 years): GD&T, FDM 3D Printing, 3-axis CNC, Lasercutting, Waterjetting, Power Tools, Soldering

Software (4 years): IntelliJ, VSCode, OpenMP, GrabCAD, Git, ROS, RViz, Linux, OpenMP, NumPy, Arduino

Languages: Python, Java, C/C++, MATLAB, JavaScript, SQL, RISC-V