

Avi Punjabi

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EDUCATION

University of California, Berkeley, Berkeley, California, 08/2026 – 05/2027

Master of Engineering in Mechanical Engineering, Concentration in Controls of Robotic and Autonomous Systems

Texas A&M University, College Station, Texas, 08/2022 – 05/2026

Bachelor of Science in Mechanical Engineering, Minor in Computer Science

SKILLS

- Control System Design
- Robot Kinematics & Dynamics
- Embedded Systems Programming
- Data Acquisition & Visualization
- Kalman Filtering & Sensor Fusion
- CAN Bus, I2C, SPI, UART/Serial
- Reinforcement Learning
- MuJoCo, Docker, OpenCV
- C++, Python, ROS2, MATLAB
- Git & Linux, ESP32 & STM32
- Circuit Design & Signal Conditioning
- Testing & Validation Design
- SolidWorks, Siemens NX
- ANSYS, FEA, CFD, Thermal Analysis
- Mechanical Design, GD&T, FMEA

EXPERIENCE

Data Acquisition & Processing Lead, Single Wheel Suspension Tester Capstone Project, *Texas A&M University*, 08/2025 – 05/2026

- Engineered a multi-sensor data acquisition system integrating IMUs, load cells, and strain gauges into a real-time dashboard, fusing sensor streams to enable continuous monitoring and state estimation of suspension performance across test cycles
- Built and validated a single-wheel suspension tester capable of applying controlled dynamic and static loads, to characterize wheel response under representative driving conditions
- Established SOPs and safety protocols governing test rig operation, reducing injury risk and equipment damage during testing
- Oversaw project budget and negotiated vendor pricing on sensors and materials, keeping spending within allocated funding

Robot Dynamics Subteam Lead, SpaceCraft VR Lab, *Texas A&M University*, 08/2025 – 05/2026

- Developed forward and inverse kinematics control algorithms at the position and velocity levels for Canadarm2, the ISS robotic arm, enabling accurate closed-loop control of simulated end-effector motion
- Integrated control algorithms into the Space Teams PRO simulation platform to validate performance under mission scenarios
- Compiled research findings into a poster and presented at the Aggie Challenge Research Expo to faculty and industry judges

Mechanical Design Intern, Acutronic Actuation Inc., *Austin, Texas*, 05/2025 – 08/2025

- Modeled 20+ mechanism and actuation components across motors, actuators, gearboxes, and test stands, standardizing interface dimensions to improve cross-assembly compatibility and cut integration rework
- Ran FEA, thermal, and CFD simulations on 50+ components and assemblies in ANSYS to validate structural and thermal performance prior to fabrication, reducing costly redesign iterations
- Partnered with machinists, technicians, and mechanical/electrical engineers to evaluate manufacturability and assembly constraints, ensuring designs met production tolerances
- Automated testing and data-analysis workflows in Python and documented the underlying procedures, cutting analysis turnaround time and improving reproducibility across the design team

Suspension, Steering, Wheels, & Brakes Subteam Member, Texas A&M Solar Car Racing, *Texas A&M University*, 05/2023 – 05/2026

- Engineered 10+ mechanism and structural components for the braking and wheel assembly, from CAD modeling through simulation and physical testing, to verify performance against design requirements
- Presented and defended steering and brake hub component designs before faculty and industry reviewers in formal design reviews, securing approval to proceed to fabrication
- Analyzed braking system design tradeoffs spanning manufacturability and cross-system impacts to guide component selection
- Synthesized findings from 50+ technical resources on automotive engineering to inform brake system design decisions

VEXU Team Lead; Treasurer; Underclassman Representative, Aggie Robotics, *Texas A&M University*, 08/2022 – 06/2025

- Directed team through 2 international VEXU Robotics competitions, coordinating testing, logistics, and budgeting to ensure competition-ready robots
- Modeled and simulated 40+ dynamic and static robot components in CAD/FEA to verify structural integrity before fabrication
- Directed development of a two-axis motorized flywheel turret assembly, applying a hybrid Gantt/Agile framework to keep design and build milestones on schedule
- Restructured testing process to run concurrently with hardware and software development, shortening overall iteration cycle

Student Research Assistant, INVENT Lab, *Texas A&M University*, 08/2024 – 04/2025

- Reviewed 20+ published tribology studies to identify experimental gaps and inform test design
- Conducted 10+ tribological experiments examining electro-adhesion, humidity, and temperature effects on friction and wear behavior, generating data for ongoing lab research
- Migrated and optimized the data-analysis codebase, integrating MATLAB and Python into a unified and automated pipeline, greatly streamlining the research process and improving consistency