KASHISH CHANDAK

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Education

Virginia Tech, Blacksburg, VA   **Aug 2024 - May 2026**
Masters in Science, Mechanical Engineering (Robotics & Automation)   GPA - 3.83
Relevant Coursework: Robotics and Automation, Advanced Mechatronics, Nonlinear Systems Theory, Digital Signal Processing, Soft Robotics, Introduction to Medical Physiology, Advanced Micro/Nano-Robotics
Nirma University, Institute of Technology, Ahmedabad, India   **Nov 2020 - June 2024**
Bachelors in Technology, Mechanical Engineering with Minor in Robotics & Automation   GPA - 3.23
Relevant Coursework: Machine Design I & II, Mechanics of Solids, Manufacturing Processes, Metrology and Quality Control, Electrical Machines, Arduino for Engineers

Technical Skills

CAD & Mechanical Design: SolidWorks (P), Additive Manufacturing / 3D Printing (P), Fusion 360 (I), GD&T - ASME Y14.5 (I), CNC Machining (I), Design for Manufacturability (I)
Modeling, Analysis & Validation: MATLAB (P), Simulink (I), ANSYS - Thermal & Structural (I), Verification & Validation (I), Root Cause Analysis (I), Risk Analysis (I)
Embedded Systems & Mechatronics: Arduino (P), ESP32 (I), micro-ROS (I), Sensors & Signal Conditioning (I), Motor Control (I), STM32 (E),
Programming & Data: Python (I), C (I), R (E)
Documentation & Standards: Technical Documentation (P), LaTeX (P), Design Controls (I), DHF (I), FMEA (I), ISO 9001 (E), ISO 13485 (E)

Relevant Experiences

Mechatronics Engineering Intern | Agrobotics inc.   **May 2025 - Aug 2025**
- Led mechanical design of robotic gripper assemblies integrating PCBs, ESP32 modules, and tactile sensors.
- Successfully integrated I2C tactile sensors with micro-ROS for ROS2 streaming and tactile feedback in **robotic systems**.
- Applied DSP techniques for signal stability and **mechanical troubleshooting**, boosting signal stability by 40% and reducing sensor drift by 30%.
- Validated system through 50+ lab and field trials, improving touch detection accuracy by 25%.

Research Intern | Indian Institute of Technology, Jodhpur   **Jan 2024 - May 2024**
- Conceptualized Gent's theory-based analytical model for dielectric elastomer actuators using MATLAB.
- Correlated experimental LDV displacement data with simulations achieving 90% model accuracy.
- Fabricated and tested 40+ **actuator prototypes** using iterative **electromechanical design** optimization.
- Improved actuator bending performance by 20% through material selection and geometric refinement.

Structural Systems Intern | GalaxEye Space Solutions   **June 2023 - July 2023**
- Designed and analyzed aerospace assemblies and EMI-shielded enclosures in SolidWorks and ANSYS using GD&T.
- Performed thermal analysis on heat-sink-mounted data acquisition modules, reducing thermal risk under flight loads.
- Incorporated payload subsystems under sheet-metal **manufacturability** and aircraft layout constraints, reducing rework.
- Formulated a 45° camera mount improving imaging field of view and reduced assembly errors by 15% via reviews.

Projects

Force-Sensing Suturing Test Rig | Research Project   **Sep 2025 - Oct 2025**
- Modified Castroviejo needle holder to integrate strain gauges for real-time surgical force feedback
- Engineered and **3D printed** precision fixtures for bi-axial surgical force measurement platform.
- Integrated 100 g load cells with latex gloves to replicate soft tissue biomechanics in microsurgery.
- Built **signal-conditioning** circuit with NAU7802 amplifier, soldering and programmed Arduino for force acquisition.

Motor Performance Under Various Loads | Academic Project   **Nov 2024 - Dec 2024**
- Developed motor test bench with STM32 microcontroller enabling 5k samples/s ADC-based **data acquisition**.
- Measured speed, torque, current, and efficiency under variable **mechanical loading** conditions.
- Analysed performance trends using MATLAB to guide motor and system design decisions.
- Enhanced load-handling efficiency by 15% through data-driven optimization.

Mercury-eBAJA | SAE eBAJA & FSAE   **Oct 2021 - Mar 2022**
- Spearheaded a **mechanical brake system** improving brake efficiency by 40%, validated on 2 vehicle models.
- Executed structural FEA on steering knuckles and hubs using ANSYS Workbench for load compliance.
- Verified designs through physical testing under loads exceeding industry benchmarks by 15%.
- Collaborated cross-functionally on mechanical integration, **system testing**, and competition readiness.

Patents and Publications

- Chandak, K., et al. "Advancements in finger prosthesis using shape memory alloy actuation mechanism." *Results in Engineering* (Elsevier), 2025.
- Chandak, K., et al. "Soft finger-like actuator for prosthesis actuated using electromyography signals." International Journal on Interactive Design and Manufacturing (IJIDeM), 2024.
- Patent: Design of a topologically and thermally optimized front brake disc for a formula car. Patent Application: 363688-001, Published: 05/04/2022.