

CHINMAY PRASHANTH

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EDUCATION

Arizona State University - Ira A. Fulton School of Engineering, Mesa, AZ

PhD in Robotics and Autonomous Systems

January 2026 - January 2031(Expected)

New York University - Tandon School of Engineering, Brooklyn, NY

M.S. in Mechatronics and Robotics

September 2022 – May 2024 | GPA: 3.6/4.0

Dayanand Sagar College of Engineering, Bengaluru, India

B.E. in Mechanical Engineering

August 2018 – May 2022 | GPA: 8.2/10

TECHNICAL SKILLS

- **Expertise:** Robot Learning, Reinforcement Learning, Vision-Language-Action Models, Mechanical Design, Robot Kinematics & Dynamics, Localization, Path Planning, Perception, Optimal Control.
- **Programming Languages:** Python, C++, MATLAB, Simulink, ROS/ROS2, OpenEmbedded.
- **Simulation Tools:** Isaac Sim, Ignition/Gazebo, MuJoCo, PyBullet, RViz, MoveIt, RQT, Robot Simulation, Virtual Prototyping.
- **Software & Tools:** SolidWorks, Fusion360, Generative Design, Inventor, Ansys, Onshape, Altium, MiniTab, 3D Modeling, PCB Design, Generative Design, CAM, CAD, URDF Generation and Tuning parameters.
- **Hardware & Prototyping:** 3D Printing (FDM & SLA), Laser Cutting, Sensor Integration, Hardware Development, FEA Analysis.
- **Control Systems:** PID Control, Kalman Filtering, Dynamic Control, Actuator Tuning, ROS2_Control.
- **Computer Vision:** OpenCV, Object Detection, Image Processing.

RESEARCH PROJECTS

- **Planetary Rover-Based Exploration and Slip Compensation System**
IIT Kanpur | October 2024 - January 2025 - [Github](#)
 - * Developed an Arduino-based single-wheel test bench (L298N motor driver, quadrature encoder, HX711 load cell, ACS712 current sensor) to validate rover slip-detection algorithms.
 - * Implemented a MATLAB/Octave EKF simulation framework (ekf_simulation.m) supporting configurable rover parameters (wheel count, mass, terrain type) for state estimation and slip-severity analysis.
 - * Built a Python analysis suite (data_collector.py, data_analyzer.py, data_visualizer.py) to automate data acquisition, statistical evaluation, and real-time CSV logging at 10 Hz.
 - * Conducted multi-terrain experimental trials—rocky, sandy, Martian-regolith, lunar—comparing simulated vs. hardware slip dynamics and refining EKF parameters for < 200 ms detection latency.
 - * Documented full project workflow (MATLAB scripts, Arduino code, prototype images, test videos, research poster) to ensure reproducibility and foster collaboration.
 - * Our team's paper on rover slip estimation was awarded **Best Paper (Docking & Rover Technologies)**, IEEE SPACE 2025.
- **Explainable Autonomous Robots and Autonomous Vehicles (IEEE ROMAN 24')**
NYU Tandon | 2023-2024
 - * Led research on human-robot interaction to develop self-explaining mobile robots (U.S. provisional patent 63/643,327), improving safety and social acceptance in urban environments.
 - * Designed and implemented an autonomous navigation framework that integrates explainability principles for better human understanding of robotic behavior.
 - * Developed a real-time projector-based communication system, allowing robots to visually project their intended path, reducing pedestrian uncertainty and enhancing safety.
 - * Integrated deep learning and sensor-fusion techniques to improve decision-making and interaction capabilities of autonomous robots in complex environments.
 - * Presented findings at IEEE ROMAN 2024 ([Paper Link](#)), contributing to advancements in explainable AI and autonomous vehicle research for future smart cities.
- **Novel Surgical Catheter Instrument for Endovascular Surgery**
NYU Tandon Future Labs / NYU Langone Aortic Centre | January - July 2024 - [Drive](#) (All Prototypes, Design and Presentations)
 - * Researched Aortic Dissection & Surgical Needs by conducting in-depth studies on Aortic Dissection Type B, analyzing existing endovascular repair techniques, and engaging in meetings with vascular surgeons to identify key clinical challenges.
 - * Designed a specialized surgical catheter with a cable-actuated cutting mechanism to slice the intimal septum, enabling precise placement of endograft stents for improved treatment of aortic dissection.
 - * Engineered biocompatible and sterilizable components using medical-grade polymers and stainless steel, ensuring compliance with ISO 10993 medical device standards and compatibility with autoclave and ethylene oxide sterilization.
 - * Developed multiple functional prototypes utilizing SLA 3D printing, precision machining, and electro-mechanical integration, followed by bench-top testing and simulated vascular trials to evaluate maneuverability and cutting efficiency.

- * Validated usability through surgeon feedback, refining the ergonomic handle, actuation system, and procedural workflow to optimize control and precision in real-world surgical applications.
- * Assessed regulatory and market feasibility by analyzing FDA 510(k) and CE marking requirements, mapping out the approval process, and conducting market research on catheter-based surgical devices to evaluate commercialization potential..

- **Precision Distance Recording System**

NYU Tandon | Sept - Dec 2023 - [Github](#)

- * Designed a GPS-independent distance recording system using the STM32F429I board and L3GD20 gyroscope for high-accuracy movement tracking.
- * Developed and implemented signal processing algorithms to convert angular velocity into precise linear distance measurements.
- * Engineered a compact, wearable band to house all electronics, ensuring user comfort and seamless integration of sensors, microcontrollers, and power management circuits.
- * Conducted extensive testing and calibration to minimize drift and improve measurement accuracy beyond conventional pedometer-based systems.
- * Validated system performance against benchmark datasets, achieving higher accuracy than Apple Health in distance tracking.
- * Documented all design iterations, testing protocols, and validation methods to ensure reproducibility and future development.

INDUSTRY EXPERIENCE

- **Graduate Research Associate (GRA) | Researcher**

EcoRobotics Lab, ASU - MSN | Jan 2026 – Present

- * Contributing to doctoral research in autonomous robotics for real-world environmental applications (soil remediation / field robotics).
- * Working on robotics system development including simulation, sensing integration, and prototyping toward deployable platforms.

- **Freelance Robotics Simulation & VLA Data Engineer | Remote**

Contract Work | Aug 2025 – Dec 2025

- * Developed simulation-based robotics data workflows to support training of foundation Vision-Language-Action (VLA) models.
- * Created and organized robot task demonstrations, environment variations, and action-observation logs for instruction-conditioned robot learning.
- * Processed simulation outputs, robot trajectories, and episode metadata into structured datasets suitable for imitation learning and VLA training pipelines.
- * Built data quality checks for episode consistency, action-label alignment, task success/failure filtering, and reproducible dataset generation.
- * Documented data collection protocols, task definitions, and dataset formatting requirements for scalable robotics training-data generation.

- **Robotics & Mechatronics Engineer | Researcher**

Upsurge Labs | Dec 2024 – July 2025

- * Led end-to-end development of an AI-powered table tennis robot, integrating NVIDIA Isaac Sim, PPO-based reinforcement learning, and custom robotic manipulation strategies.
- * Designed and built a custom 6-DOF robotic arm for ESP32 and NVIDIA Jetson platforms, including URDF modeling, joint parameter tuning, and low-level control integration.
- * Implemented MoveIt for real-time motion planning, inverse kinematics, trajectory generation, and collision avoidance during high-speed racket swings.
- * Developed and tuned PID and impedance-control strategies to improve joint stability, smooth motion, and force-aware control.
- * Built a simulation-to-reality pipeline integrating hardware drivers, perception sensors, and control modules for physical robot deployment.

- **Junior Research Fellow (JRF) | Researcher**

Space Dynamics & Flight Control Lab, IIT Kanpur | Oct 2024 – Dec 2024

- * Conducting fundamental and applied research on planetary rover mobility, focusing on slip measurement and terrain adaptability.
- * Developing custom six-wheeled rover prototypes with a rocker-bogie suspension system for experimental validation in simulated planetary conditions.
- * Investigating wheel-terrain interaction models to enhance rover navigation and autonomy on challenging extraterrestrial surfaces.
- * Designing and executing controlled experiments to analyze slip dynamics and develop slip estimation methodologies.
- * Collaborating on research publications, conference presentations, and technical reports to contribute to advancements in planetary exploration.

- **Venture Fellow | Researcher & Product Developer**

NYU Tandon Future Labs – A/X Venture Studio | Jan 2024 – July 2024

- * Led medical robotics research for a robotic-assisted surgical catheter instrument, collaborating with NYU Langone Aortic Center.
- * Conducted biocompatibility studies, evaluating materials, coatings, and sterilization techniques for safe surgical integration.
- * Designed and prototyped cable-actuated end effectors using additive manufacturing and electro-mechanical tools, ensuring precision in minimally invasive procedures.
- * Developed kinematic models and control mechanisms to enhance the instrument's articulation and stability during surgery.
- * Worked closely with surgeons, biomedical engineers, and clinicians to refine design specifications based on human factors and surgical ergonomics.
- * Researched commercialization potential, analyzing regulatory pathways, market viability, and IP strategies for medical device approval.

- **Research Intern, Advanced Defense Systems - Naval (Military Radars)**

Bharat Electronics Ltd., Bengaluru, India | April 2021 - May 2021

- * Contributed to the design and development of radar hubs for naval ships.
- * Modeled functional units using SolidWorks and conducted simulations using ANSYS.
- * Gained hands-on experience in cross-functional collaboration across the radar hub lifecycle.

CERTIFICATIONS :

- * NYU Tech Venture Workshop – NYU Entrepreneurial Institute
- * SolidWorks Associate Level Training – Internshala
- * MATLAB Programming – Vanderbilt University, Coursera
- * ROS1 and ROS2 – Udemy
- * Fusion 360: Design for Mechatronics and Generative Design – LinkedIn
- * Deep Learning: Face, Object Recognition and tracking – LinkedIn
- * Introduction to Symbolic Math with MATLAB, Simulink Onramp, Solving Ordinary Differential Equations with MATLAB – MathWorks