

Prabin Kumar Rath

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EDUCATION

Ph.D. Computer Science

Arizona State University, Tempe, AZ

Aug 2025 - May 2030

4.00 GPA

M.S. Artificial Intelligence and Robotics

Arizona State University, Tempe, AZ

May 2024

4.00 GPA

B.S. Computer Science

National Institute of Technology, Rourkela, India

May 2020

8.91 GPA

TECHNICAL SKILLS

Programming Languages: Python, MATLAB, C/C++, C#, TypeScript, Java, Shell

Cloud Technologies: Azure, AWS, Kubernetes, Docker **Simulators:** IsaacLab, PyBullet, CoppeliaSim, MuJoCo, Maniskill

Tools and Frameworks: PyTorch, TensorFlow, ROS/ROS2, OpenCV, Open3D, Git, Linux, AI Copilot

PUBLICATIONS

- [1] "StageCraft: Execution Aware Mitigation of Distractor and Obstruction Failures in VLA Models", In *IROS 2026* [↗](#)
- [2] "Factorizing Diffusion Policies for Observation Modality Prioritization", In *ICRA 2026* [↗](#)
- [3] "XMoP: Whole-Body Control Policy for Zero-shot Cross-Embodiment Neural Motion Planning", In *ICRA 2025* [↗](#)

RESEARCH EXPERIENCE

Vision-Language-Action (VLA) Models for Franka FR3 Robot | Robot Learning

Fall 2025 - Present

- Extended the LeRobot backend to support the Franka FR3 robot platform through ROS2 APIs.
- Created a real-time teleoperation system with multiple control interfaces, including Meta Quest 3, FACTR whole-body leader-follower setup, and SpaceMouse.
- Developed robust, and fault-tolerant robot teleoperation software for HRI user study experiments.
- Trained, deployed, and benchmarked multiple VLA and behavior cloning models, including $\pi_{0.5}$, SmolVLA, XVLA, Diffusion Policy, and ACT on the Franka FR3 robot, achieving 90%+ success rates on long-horizon manipulation tasks.

Pre-Execution Scene Intervention for Policy Improvement | IROS 2026, [Webpage](#)

Fall 2025 - Spring 2026

- Proposed a training-free policy improvement method for VLAs that leverages Vision-Language Model (VLM) in-context reasoning to modify environments and prevent anticipated policy failures.
- Investigated prompting strategies for strict instruction following, spatial environment understanding, and low-hallucination failure reasoning in VLMs.
- Demonstrated successful VLA model deployment under distractor and obstruction settings, achieving absolute success rate gains of 23% for $\pi_{0.5}$ and 54% for SmolVLA.

Improving Robustness of Diffusion Policies using Modality Prioritization | ICRA 2026, [Webpage](#)

Fall 2024 - Spring 2025

- Studied sensor modality prioritization for improving policy robustness against visual distractors, camera occlusions, and appearance changes, supported by theoretical analyses for training factorized diffusion and flow-matching models.
- Improved Diffusion Policy deployment success rates under significant visual disruptions, outperforming standard baselines by an absolute 15% in simulation and 40% in real-world tasks.

Cross-Embodiment Generalization in Neural Motion Planning | ICRA 2025, [Webpage](#)

Fall 2023 - Spring 2024

- Designed a novel behavior cloning (BC) policy architecture for neural motion planning, enabling zero-shot configuration-space generalization across 7 commercial robots with 70% average planning success.
- Introduced a pointcloud-based semantic segmentation method for detecting collision points on robot surfaces, achieving cross-embodiment sim-to-real generalization with 76.6% IoU and 90.3% recall across 7 robots.
- Created procedural data generation pipelines in PyBullet for training Diffusion and Transformer BC policies.
- Demonstrated sim-to-real motion planning from pointclouds on Franka FR3 and Rethink Sawyer robots, achieving a 72% average planning success rate in cluttered environments.

INDUSTRY EXPERIENCE

Experian, Costa Mesa, CA:

MLOps Engineer

June 2024 - May 2025

- Developed scalable workflows for ML model life cycle management, and created inference orchestration platforms adhering to millisecond latency response SLAs serving **300+** enterprise clients. [Ascend Ops Product](#)

Wells Fargo, Hyderabad, India:

Software Engineer

Aug. 2020 - July 2022

- Architected and deployed robust, multithreaded REST API modules in Python to interface with Azure Cognitive Services efficiently. Optimized average response time by **75%**, while delivering **4x** throughput.

SERVICE

Paper Reviewer: CoRL 26 | ICRA 26, 25, 24 | RA-L 26, 23 | IROS 26, 23 | RO-MAN 23

Session Chair: Autonomous Vehicles @ ICRA 2025