Mohamed Shuaib Nasurudeen

nshuaibmohamed@gmail.com — LinkedIn — GitHub — Profile — Worcester, MA

Research Interests: Humanoids, Learning for Control (RL) and Imitation (DP, FM), Motion Planning, and Optimal Control.

EDUCATION

Worcester Polytechnic Institute **Aug. 2025 – May 2027**
Master of Science in Robotics Engineering, GPA: 3.78/4.0 *Worcester, MA*

- Coursework: Motion Planning, Robot Control, Optimal Control and Reinforcement Learning, ML for Robotics.

Puducherry Technological University **Dec. 2020 – May 2024**
Bachelor of Technology in Mechatronics Engineering, CGPA: 8.75/10 *Puducherry, India*

EXPERIENCE

Research Assistant — ELPIS Lab, Worcester Polytechnic Institute **Dec. 2025 – Present**
Advisor: Prof. Constantinos Chamzas

Collision-Aware Humanoid Motion from Human Videos **Dec. 2025 – Present**
Manuscript in preparation for **IEEE Robotics and Automation Letters (RA-L), 2026**

- Developing a demonstration-guided framework for generating collision-aware humanoid motions from human video demonstrations.

Humanoid Tugger: Loco-Manipulation of Wheeled Objects [master's thesis] **Jun. 2026 – Present**
Manuscript in preparation for **Robotics: Science and Systems (RSS), 2027**

- Developing a planning and reinforcement-learning framework for long-horizon loco-manipulation of wheeled objects with a Unitree G1 humanoid.

Robotics Software Engineer — Origin, India **Jan. 2025 – Jun. 2025**

- Unified Fanuc CRX-10iA/L, UR10e, and an Ewellix Liftkit on a mobile base under a single ROS2 stack, enabling drywall spraying and sanding.
- Performed intrinsic and extrinsic calibration for an end-effector wide-angle camera, a front-facing fisheye, and a 3D LiDAR, registering all three into a common robot frame.

SELECTED PROJECTS

Code and demonstration videos: github.com/shuayyy

Humanoid AMP-PPO: Whole-Body Policy Learning **MuJoCo, PyTorch, PPO, AMP**

- Built a Unitree G1 whole-body reinforcement-learning framework for locomotion and dual-arm behaviors using PPO with an asymmetric actor-critic, AMP, motion-prior rewards, curricula, and domain randomization.

Two Towers and Beyond: Task and Motion Planning **Genesis, PDDL, Pyperplan, OMPL**

- Built a TAMP pipeline that abstracts block poses into predicates, generates PDDL problems, plans symbolic actions, executes manipulation primitives, replans, and verifies final stacks.

Imitation Learning for Table Top Manipulation **robosuite, robomimic, Visuomotor Policies**

- Trained BC-Transformer and DiT on 200 expert demonstrations for PickPlaceCan, with dual camera and proprioceptive observations.
- DiT reached 96% success vs. 85% for the BC baseline across 1000 randomized evaluation environments.

Quadrotor Controller **Python, PyBullet, Crazyflie 2.0**

- Designed and tuned PD and LQR trajectory controllers for the Crazyflie 2.0 in PyBullet, then deployed them on the physical quadrotor.
- Achieved simulation trajectory-tracking RMSE of 6 mm with PD and 2 mm with LQR, a 67% reduction.

Other projects: flow-matching visuomotor policies, constrained motion planning for humanoids, AORRTC planning for dynamic models, RL for grasping, residual policies for non-prehensile manipulation.

HONORS AND AWARDS

- **3rd Place**, Revolute Boston Physical AI Hackathon, Fab Foundation, 2026.
- **Provost Scholarship**, Worcester Polytechnic Institute, 2025.

REFERENCE

Prof. Constantinos Chamzas, Assistant Professor of Robotics Engineering, WPI — cchamzas@wpi.edu