

Arjun Murali



Portfolio



arjunmurali215



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EDUCATION

BITS Pilani, Hyderabad Campus

B.E. Electronics and Instrumentation (CGPA: 8.23/10)

Aug 2023 – May 2027

Hyderabad, India

Minor: Robotics and Automation (GPA: 9/10)

TECHNICAL SKILLS

Languages: Python, C++, Java, Flutter

Frameworks: PyTorch, OpenCV, ROS 1 & 2, Gazebo, MuJoCo

Design Tools: SolidWorks, Fusion 360, KiCAD

Areas of Interest: Manipulators, Computer Vision, Kinematics

PROJECTS

DexLite: Dexterous Grasp Synthesis

Dec 2025

- Developed a generative pipeline inspired by *Dex1B*, leveraging a CVAE to synthesize diverse Shadow Hand configurations from object point clouds.
- Engineered a dual-purpose architecture capable of expanding existing datasets with unbiased diversity or synthesizing grasps for novel, unseen objects.
- Achieved a 79% success rate in physics-based lifting simulations conducted in MuJoCo.

F1TENTH Autonomous Racing (Team PulpFriction)

Dec 2025

- Secured **2nd Place Overall** at the 26th Roboracer Competition, IIT Bombay.
- Developed an autonomous racing stack utilizing Model Predictive Contouring Control (MPCC) for time-optimal trajectory tracking.
- Generated globally optimal racing lines to maximize velocity profiles while maintaining traction.

Dual-Arm Grasp Dataset Generator

Aug 2025

- Developed a dataset generation pipeline for dual-arm robotic manipulation in cluttered environments, extending the GraspNet-1B dataset for dual arm grasp pairs.
- Engineered a geometric collision pruning and force-closure verification system to synthesize collision-free, stable bimanual grasp pairs from single-view RGB-D data.

Beetle – Autonomous Research Testbed

Nov 2024

- Designed and assembled a robust 60kg payload skid-steer AGV powered by an NVIDIA Jetson AGX Xavier.
- Integrated a sensor suite (Intel T265, D435, 2D LiDAR) to establish a versatile testbed for evaluating diverse 2D/3D SLAM and path planning architectures.
- Implemented LiDAR SLAM and RGB-D SLAM pipelines with dynamic path planning.

POSITIONS OF RESPONSIBILITY

President – Automation and Robotics Club, BITS Hyderabad

Apr 2025 – Present

- Leading one of the largest technical clubs on campus, managing a team of 60+ active members and mentoring junior projects.
- Spearheaded educational initiatives by organizing hands-on workshops on Computer Vision, CAD, and Embedded Systems, impacting over 150 students.
- Liaised with faculty and external organizations to secure funding and resources for student-led research initiatives.