ASHISH PAKA

+1 (480)-651-5047
ashishpaka1998@gmail.com
Portfolio Website github.com/Ashish-Paka
linkedin.com/in/ashish-autonomousrobotics

- *Robotics engineer with a passion to advance perception and automation in robots and skilled in physics, math, ML, DL, Transformers and AI. With precise skills in controls, robotics and mechanical structures engineering, I intend to learn to be the perfect tool to create and improve robotics technologies that will meaningfully impact life on Earth and drive global progress.*

EDUCATION

M.S. in Robotics and Autonomous Systems | Arizona State University, Tempe, AZ
Aug 2023 – May 2025

- *GPA - 3.96/4.00*
- *Relevant Coursework: Linear Algebra, Machine Learning and Deep, Perception in Robotics, AR-VR Systems, Expressive Robotics, Modelling and Control of Robots, Advanced System Modelling Learning, Dynamics and Control, Reinforcement Learning, Multi-Robot Systems*

B.Tech. in Mechanical Engineering | Manipal Institute of Technology, Manipal, India *July 2016 – June 2020*
GPA - 7.49/10.00

- *Minor degrees in Mechanical Design and Physics*

PROFESSIONAL EXPERIENCE

1. *Robotics Research Engineer - LOGOS Robotics Lab, Arizona State University - Tempe, AZ*
Jan 2025 – Present
   - *Authored a paper that was presented at ASU's SEMTE 2025 Symposium under Prof. Nakul Gopalan to make a shared action space for human robot collaboration, allowing robots or humanoids to understand human actions. Worked with a team of 3 people on the Franka robot arm to recognize and train tasks to perform*
   - *Utilized knowledge in skill learning, computer vision-based environment state and action space contextual understanding for real-time collaboration in adaptive robotics*
2. *Mechanical Engineer - Larsen & Toubro Technology Services (LTTS) - Bangalore, India*
Sept 2020 – June 2023
   - *Created and analyzed products being proficient in 3D design in Creo, SOLIDWORKS, CATIA, Autodesk Fusion360 and Inventor. ANSYS workbench and APDL for FEA and CFD respectively for better and perfect designs*
   - *Designed containers, refrigeration trucks, transport buses, and electronics housing systems for international clients like Carrier Transicold, Scania, Eaton Corporation and Cooper Lighting*
   - *Began as an intern and completed 8 projects with 100% quality delivery for clients to be promoted to "GET", "Associate Engineer" and to "Engineer" in a period of 2 years*

PROJECTS

1. *Patent no. 506725 - Application No. 201941044944 - "A SYSTEM FROM EJECTION" - Nov 2019*
   - *Granted a patent as 1 of 2 inventors of a novel aerospace ejection system with pressurized gas that is 99.97% reliable compared to black powder.*
2. *Cross Embodiment Skill Representation in Robotics - LOGOS Robotics Lab - Ongoing*
   - *Implemented cross-embodiment skill representation in robotics by leveraging VLMs to generate structured semantic descriptions from human and robot demonstration videos*
   - *Implemented a framework to support unsupervised continual learning for skill differentiation and robust human-to-robot skill transfer*
3. *Swarm Robotics for Autonomous Collaborative Mapping - Dec 2024*
   - *Researched and presented at Southwest Robotics Symposium 2024, swarm robotics combined with RL, TOF cameras and LiDAR for collaborative autonomous exploration and mapping*
4. *Optimized VoxFormer for Autonomous Driving - May 2024*
   - *Designed a sparse voxel transformer-based model for voxelized semantic scene representation using 2D camera inputs to estimate occluded voxels and enhance environmental perception in autonomous driving systems*
   - *Developed autonomous systems to imagine hidden objects using occupancy voxels to get 10% higher accuracy compared to lidar based systems in occluded spaces and close range*

5. *Expressive Robot Hand - May 2024*
   - *Fabricated a computer vision guided robotic hand capable of mimicking human gestures and operating autonomously, enhancing interactive capabilities through dynamic motion tracking and AI-ML-RL integration*
   - *Interfaced and coded as a human robot interaction based personal assistant*
6. *AR-VR Pass through and Virtual Reality Environment - May 2024*
   - *Developed immersive AR and VR applications, including interactive games and environments, utilizing MQDH and Unity, encompassing both software and hardware components for comprehensive AR/VR system integration*
7. *6-DOF Path Planning for Industrial Robot Arm - Dec 2023*
   - *Engineered an algorithm to control a high dof robotic arm to navigate between 3D coordinates, optimizing trajectory planning for enhanced precision in industrial applications*
8. *ML-DL Image Recognition based algorithms comparison for e-commerce - Dec 2023*
   - *Conducted comparative tests using 3 ML-DL methods for image recognition/classification of ecommerce product datasets to automatically sort products and give personalized recommendations*
9. *thrustMIT (India's first and number 1 Student Rocketry Team 2017-2020)*
   - *Developed sounding rockets Project Vyom and Project Arya as a senior Structures and Composites Member and won the Spot Award for Design for "Project Arya" at SA Cup 2019, leading a team of 13 members*
   - *Led the complete in-workshop manufacturing of the rocket and complete structural design of the body of the rocket*
10. *Design of Total Knee Total Knee Arthroplasty Prosthetics (Jan 2020 - May 2020)*
11. *Bharat Heavy Electricals Limited (BHEL), Hyderabad, India - Summer 2018 Internship*
    - *Interned in the steam turbine department to work in a Plain Plug Gauge Project*
    - *Researched about thermodynamics and worked in the manufacturing design of gas and steam turbines*

SKILLS

- ***CODING****- Python, C/C++, Java, embedded C, CUDA Programming, MATLAB, Arduino, LaTeX*
- ***ROBOTICS:*** *ROS 1/2, Catkin, V-Rep, Gazebo, MoveIt, MuJoCo, Arduino, Pybullet, Sensor Fusion, PLC Programming, Arduino and Embedded Systems*
- ***SOFTWARE:*** *TensorFlow, Pytorch, Git, Docker, OpenCV, OpenAI Gym, Meta Quest Development Hub for AR/VR, Unity AR/VR, PTC Creo Parametric, AutoCAD, Solidworks, Inventor, CATIA, ANSYS Static structural/Transient thermal/Fluent/APDL, Fusion360, Microsoft Office, Linux, Windows, Android, iOS*
- ***FIELDS OF INTEREST:*** *Computer Vision/Perception in Robotics, Machine Learning, Deep Learning, Reinforcement Learning, Product development, AR-VR Development*
- ***ROBOTICS SKILLS:*** *Swarm Robotics and Multi-Robot Systems, Autonomous Systems and Navigation, Expressive Robotics, Robot Kinematics and Dynamics, Motion-Planning, SLAM (Simultaneous Localization and Mapping), 3D printing and rapid prototyping experience*
- ***OTHER SKILLS:*** *Mechanical Product Design/Simulation, GPU Programming with CUDA, Material science and composites, Aerospace Design, DFMA, DFMAE, Project Management, Strategy Formulation, Team Management*

CERTIFICATIONS

- *Machine Learning: Modern Computer Vision and Generative AI* — *LPT, UDEMY - Jul 2025*
- *Self-Driving and ROS 2 - Odometry and Control* — *Antonio Brandi, UDEMY - June 2025*
- *Self-Driving and ROS 2 - Map and Localization* — *Antonio Brandi, UDEMY - June 2025*
- *Robotics and ROS 2 – Manipulators* — *Antonio Brandi, UDEMY - May 2025*
- *Introduction to Programming with MATLAB* — *Vanderbilt University, Coursera - Jun 2018*
- *The Complete Python Bootcamp from Zero to Hero in Python* — *Jose Portilla, UDEMY - Jan 2023*
- *Autodesk Fusion 360 Integrated CAD/CAM/CAE* — *Autodesk Inc., Coursera - Oct 2018*
- *Introduction to Digital Manufacturing with Autodesk Fusion 360* — *Autodesk Inc., Coursera - Oct 2018*
- *Digital Manufacturing and Design* — *The State University of New York, Coursera - Jul 2019*
- *Material Science: 10 Things Every Engineer Should Know* — *UC Davis, CA, Coursera - Jun 2018*