ABHISHEK CHOTHANI

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EXECUTIVE SUMMARY

I am a robotics engineer with over two years of experience in robotics, automation, and mechanical design, I specialize in developing advanced robotic systems, from autonomous navigation to robotic manipulation. My work integrates classical robotics algorithms with cutting-edge machine learning techniques, bridging reliability and innovation to create solutions that are efficient, adaptable, and impactful.

EDUCATION

Florida Institute of Technology | Melbourne, Florida, USA Jan 2023 – Dec 2024
Master of Science in Mechanical Engineering | Specialization in Robotics and Automation
Research on reinforcement learning and Imitation learning for robotic manipulation
Thesis: End-to-End Learning for a Low-Cost Robotics Arm, advised by **Dr. Ryan White**

Gujarat Technological University | Ahmedabad, Gujarat, India Aug 2017 – May 2021
Bachelor of Engineering in Mechanical Engineering
Focused on robotics, automation, design and manufacturing.

RESEARCH EXPERIENCE

Research Assistant | NEural TransmissionS (NETS) Lab | Melbourne, Florida Jan 2024 – Dec 2024

- Spearheaded the implementation of end-to-end robotic learning for 6 DOF custom robotic manipulators, leveraging **imitation learning** techniques and utilizing tools such as **Python, PyTorch**, and **Isaac Sim**.
- Explored state-of-the-art approaches including **Action Chunking with Transformers (ACT)** and **Diffusion Policies,** achieving an **85% success rate** in dynamic manipulation tasks.
- Built a **pick-and-place pipeline** using the **Drake robotics framework** and **KUKA Manipulator**, leveraging classical robotics techniques and **reinforcement learning** techniques like **Proximal Policy Optimization (PPO)** to achieve object manipulation.
- Conducted comparative analysis of classical robotics and modern AI-driven methods, bridging industrial reliability with adaptive, cost-effective solutions. Master's thesis Details [URL]

WORK EXPERIENCE

Robotics Project Developer Intern | Kennedy Space Center Visitor Complex | FL June 2024 – Jan 2024

- **Designed and built a functional model of NASA's Perseverance Rover** using **Fusion 360** for mechanical design, **Raspberry Pi**, and **STM32 microcontroller** for embedded control.
- **Developed and programmed real-time motion control** using **ROS (Robot Operating System)**, **C** and **C++ and PID control algorithms**, to ensure precise and autonomous operation, delivering an engaging and educational experience for students and visitors.
- **Collaborated on hardware and software integration**, including interfacing with **IMUs, ultrasonic sensors, and camera modules**, and implementing **real-time motion control** using, achieving a fully operational and interactive model within a challenging three-month timeline. Project Details [URL]

Mechanical Engineer Intern | Jaycon Systems | Melbourne, Florida Sep 2024 – Dec 2024

- Designed and tested components for an augmented reality (AR) device using **Fusion 360** for CAD and **ANSYS**.
- Developed and deployed deep learning-based object detection and tracking models and implemented computer vision pipelines on AR devices using **OpenCV**, **YOLO**, and the **NVIDIA Jetson Orin** platform. Project Details [URL]

Robotics Engineer | BandG Robotics | Ahmedabad, India Jan 2021 – Dec 2022

- Developed and programmed robotic manipulators, optimizing their performance using **ROS**, **Python**.
- Optimized **CNC manufacturing processes** for manufacturing by leveraging **CAM software** such as **Fusion 360** and **Mastercam**.

CERTIFICATIONS

- **Deep Learning Specialization** | Coursera
- **Autodesk CAD/CAM/CAE Specialization** | Coursera
- **HASS CNC Milling and CNC Lathe Operator** | HASS Automation

SKILLS

- **Programming**: Python, C/C++, MATLAB, PyTorch, ROS and ROS2, OpenCV, PX4 autopilot
- **Robotics**: Robotics Manipulation, Computer Vision, Imitation Learning, Reinforcement Learning
- **Device**: Raspberry pi, Jetson, Arduino, STM32, ARM Cortex-M4
- **Simulation**: Isaac Sim, Drake, Gazebo
- **CAD/CAM**: Fusion 360, SolidWorks, Ansys, Mastercam
- **OS**: Linux Ubuntu

PROJECTS

- **Bipedal Training of Spot using IsaacLab & PPO (2025)** – Trained Boston Dynamics' Spot to balance on two legs using reinforcement learning. Project URL
- **ROS Noetic Tutorials (2024)** – Step-by-step tutorials for learning ROS Noetic. Project URL
- **Pan and Tilt Object Tracking (2024)** – Tracking system using Dynamixel servos and YOLO. Project URL
- **Gesture-Controlled Drone (2023)** – Hand gesture-controlled drone using MediaPipe and PX4. Project URL
- **ARM Cortex-M4 Development (2023)** – Embedded programming with FreeRTOS. Project URL