

# TEJA VISHNU VARDHAN BODDU

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## PROFESSIONAL SUMMARY

Master's student in Robotics and Autonomous Systems with hands-on experience integrating AI into robotics—combining deep learning, computer vision, and control systems to develop autonomous robots and simulation platforms. Skilled in building and deploying AI-enabled solutions (VLM, SLAM, ROS2/PX4) for navigation, perception, and intelligent control. Seeking a role to leverage technical expertise in real-world robotic applications.

## EDUCATION

### MS, Robotics and Autonomous Systems (Systems Engineering)

Arizona State University, Tempe, AZ

Aug 2024 – May 2026

GPA: 4.0/4.0

### Bachelor of Technology, Mechanical Engineering

Indian Institute of Technology Madras, Chennai, India

Nov 2023

## EXPERIENCE

### Engineering Course Grader

Arizona State University, Tempe, AZ

Aug 2025-Dec 2025

## TECHNICAL SKILLS

**Programming Languages:** Python, MATLAB

**Robotics & Automation:** ROS2, PX4 Autopilot, SLAM, Inverse Kinematics, PID Control, Vision-Based Navigation

**Simulation:** Nvidia IsaacSim, Gazebo Sim, Simulink

**AI/ML Frameworks:** PyTorch, TensorFlow, HuggingFace Transformers, Scikit-learn

**Generative AI:** RAG, GANs, Diffusion Models, LLMs, Agentic AI

**Computer Vision:** OpenCV, YOLOv8, Image Processing, Object Detection, Real-time Tracking

**Deep Learning:** Neural Networks, CNNs, GANs, Natural Language Processing

**Tools & Software:** SOLIDWORKS, AutoCAD, Git, Docker, Linux

## PROFESSIONAL CERTIFICATIONS

### IBM Professional AI Certification

Machine Learning Specialization (Stanford & DeepLearning.ai)

## TECHNICAL PROJECTS

### Bio-Inspired Quadruped Spider Robot (Custom 3D Build + RL Locomotion)

- Built a custom 3D-printed quadruped using DS3225 servos, Arduino Mega control, and ROS 2 on Raspberry Pi 4 with LiDAR, camera, and IMU for SLAM and object detection.
- Developed a reinforcement learning locomotion controller using CPGs to generate rhythmic leg motion, training it in simulation and testing transfer to the real robot.

### Multi-Robot Convoy with Provably Safe Formation Control

- Built and simulated a 4-robot warehouse convoy controller that uses optimization-based CLF/CBF control to maintain formation while guaranteeing collision avoidance with robots and moving obstacles in MATLAB and NVIDIA Isaac Sim.
- Achieved 100% collision-free runs at 60 Hz real-time control, validating performance across multiple corridor and intersection scenarios.

### PX4-based UAV Rock Detection & Localization (2025)

- Created a UAV simulation platform with ROS2 and PX4, training YOLOv8 for high-accuracy rock detection. Implemented photogrammetry-based terrain models and robust object localization using ROS2 transformations.

### Denoising Diffusion GAN: Latent Manipulation & Synthetic Data Generation (2025)

- Implemented DD-GAN for efficient image synthesis with controllable diversity, using NVIDIA's framework and latent editing techniques. Performed experiments on CelebA-HQ to analyze generative behavior and optimized pipelines for scalable synthetic data creation.

### AI-Accelerated Multi-Modal Tutor (ASU + NVIDIA Spark Challenge, 2025)

- Developed an LLM-powered tutor deployed on GPU clusters, integrating multi-modal retrieval (PDFs, videos, code) and real-time speech recognition. Automated code conversion and benchmarking for CPU-GPU acceleration, enhancing data science and programming education.

### Sustainable AI: Efficient Knowledge Access with Agentic RAG (2025)

- Built a role-secured RAG system using domain-specific small models, cutting AI compute costs and energy use by over 85%. Optimized intelligent query routing for efficient, low-latency enterprise knowledge access.

### Autonomous Maze-Solving Robot — Digital Twin (2024)

- Built a digital twin of a robotic arm to execute maze-solving tasks autonomously. Combined Python/OpenCV vision algorithms with MATLAB-based kinematics, ensuring precision movement and reliable real-time communication with the physical robot.

### Autonomous Line Following & Precision Landing — Parrot Minidrone (2025)

- Designed and simulated autonomous landing and tracking for a mini-drone using MATLAB Simulink and Stateflow. Achieved adaptive landing on moving targets through real-time image processing, state-machine controllers, and hardware-in-the-loop simulation.

## LEADERSHIP & ACTIVITIES

### Volunteer, Sanghi Foundation Arizona State | 2024 FIRST Robotics Competition

- Supported event organization, assisted 20+ robotics teams, and facilitated smooth competition operations.
- Honeywell Hackathon 2025 | AI Spark Hackathon by NVIDIA 2025 | Los Alamos National Lab Hackathon 2025 | SunHack 2025