Nithin Reddy

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Education

University of Michigan, College of Engineering Ann Arbor, MI

Bachelor of Science in Engineering in Robotics; GPA: 3.66/4.00 *Aug 2023 - May 2026*

- **Relevant Courses:** Robot Dynamics and Simulation, Data Structures and Algorithms, Robot Sensors and Signals, Human-Robot Systems, Linear Algebra, Electronic Circuits, Multivariable and Vector Calculus, Discrete Mathematics, Probability and Statistics
- **Organizations:** Robotics Undergraduate Student Council (RUSC), Autonomous Robotic Vehicle Team (ARV), Indian American Student Association (IASA)

Experience

Autonomous Robotic Vehicle Team Ann Arbor, Michigan

Computer Vision Engineer *Jan 2024 - Present*

- Designed software for autonomous vehicle perception using **machine learning** and **computer vision**
- Evaluated advanced machine learning models and **convolutional neural networks (CNN)** for semantic segmentation, leveraging insights from peer-reviewed research papers

Michigan Data Science Team Ann Arbor, Michigan

Machine Learning Engineer *Sep 2023 - Apr 2024*

- Cleaned and transformed large datasets with over 1,000 entries, converting categorical features into numerical representations for model training
- Implemented and fine-tuned **machine learning algorithms** for network attack detection using Python libraries such as **scikit-learn**
- Developed custom **feed-forward** algorithms from scratch for implementation in **neural networks**

Projects

CartPole-v1

Built using OpenAI Gym and PyTorch

- Developed a **Deep Q-Network (DQN)** using **PyTorch** to train an agent for the **CartPole-v1 environment**, successfully balancing the pole using **deep reinforcement learning** techniques
- Utilized **OpenAI Gym** to create and manage the simulation environment, enabling effective training and evaluation of the agent
- Optimized the **DQN architecture** and training algorithms, enhancing the agent's learning efficiency and achieving significant performance improvements over 500 training episodes

End-to-End Image Captioning

Built using PyTorch and Transformers

- Designed and structured a custom **PyTorch** dataset class to seamlessly combine image features and captions, ensuring efficient data loading and preprocessing
- Implemented a **Vision-Encoder-Decoder** training pipeline by integrating a **ViT** encoder and **BART** decoder using the **Hugging Face Transformers** library, enabling end-to-end image captioning

Personal Website

Built using HTML, CSS, and JavaScript

- Developed a responsive personal website using HTML, CSS, and JavaScript, featuring interactive project showcases and a dynamic navigation bar
- Enhanced user experience with UI/UX elements to boost visual appeal and engagement.
- Ensured accessibility and user-friendly design, providing an inclusive experience across all devices.

Skills

Languages: Python, C++, MatLab, Java, JavaScript, CSS, HTML

Frameworks: PyTorch, OpenAI Gym, Hugging Face Transformers, TensorFlow, scikit-learn, Pandas, NumPy

Software: VSCode, LTSpice, XCode, Microsoft Office, Google Workspace