Nikhil Chowdary Gutlapalli

Graduate Student - Robotics

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Education

- **Northeastern Univeristy** — Boston, U.S.A
  Master of Science in Robotics - ECE; — *Jan 2023 - Present*
  Courses: *Robotics Sensing and Navigation, Mobile Robotics*
- **Amrita School of Engineering** — Amritapuri, Kerala, India
  Bachelor of Technology - Electronics and Communication; — *July 2016 - June 2020*
  Courses: *Computer Programming, Information Technology Essentials, Computer System Architecture, Optimization Techniques*

Skills Summary

- **Languages**: Python, C, SQL
- **Frameworks**: Robot Operating Systems, PyTorch, Scikit Learn, TensorFlow, Keras, TensorFlow, ONNX
- **Tools**: Docker, GIT, MySQL, OpenCV
- **Platforms**: Linux, Web, Windows, Arduino, Raspberry

Experience

- **MulticoreWare Inc** — Chennai
  ML Software Engineer — *Oct 2020 - Dec 2022*
  - : Worked on Deep learning Projects such as Computer Vision, Convolutional Neural Networks and Optimization techniques with clients from the US and Canada.
  - : Made a breakthrough of AI in radar technology, which can replace the Angle beamforming (signal processing technique) with Neural Networks in a next-generation automotive radar sensor.
  - : I worked with a Leading AI Semiconductor vendor on libraries that provide advanced quantization and compression techniques for trained neural network models and TensorRT SDK.
- **Humanitarian Technology Labs.** — Amritapuri
  Student Researcher — *Dec 2017 - Aug 2020*
  - : Worked on the software stack for the robotics, which includes Auto-Navigation, Speech Recognition and Computer Vision.
  - : Implemented the Computer Vision interface to assist the robotic arm and also while performing auto-navigation
  - : Configured and implemented mapping, localization, and pose estimation algorithms based on LIDAR, vision, IMU for outdoor and indoor environments.

Projects

- **Neural Network Optimizations (Deep Learning, Computer Vision, Radar Detections)**: Optimizing the existing Neural Networks using open-source TensorRT and Clients software, comparing the FPS and Accuracy with existing technologies. Tech: Python, Pytorch, TensorFlow, Nvidia TensorRT, & Xavier.
- **Road Lane Markings using Semantic Segmentation (Computer Vision, Convolutional Neural Networks)**: Detected road lane markings using UNet and HRNet Architectures. Used Apolloscape dataset and achieved 87% accuracy. Tech: Python, OpenCV, PyTorch, CNN and Albumentations
- **Self Driving Wheel Chair (Autonomous Navigation, Robotic Kinova Arm)**: Designed a Self-Driving Wheelchair, which can auto-navigate from 1 place to another, with obstacle avoidance systems. Tech: Python, ROS, Raspberry PI, SLAM
- **Chetak: A Service Robot (Computer Vision, Speech Recognition)**: The robot was designed to serve the people, where it implement the tasks by hearing the commands using speech recognition and the CV techniques . Tech: Python, YOLO-v3, SLAM, Google Speech

Publications

- **Journal: ROS Based Autonomous Navigation Platform with Human Robot Interaction (Object Recognition, Speech Recognition)**: Accepted at TELKOMNIKA Telecommunication Computing Electronics and Control (Scopus indexed journal) Tech: ROS, Gazebo, SLAM (July '22)
- **Integration of Vision based Robot Manipulation using ROS for Assistive Applications (Deep Learning)**: Published in IEEE. Tech: PyTorch, Coordinate transformations (July '20)
- **Human Robot Interaction on Navigation platform using Robot Operating System (ROS, SLAM, OS)**: Published in IEEE. Tech: Python, Auto Navigation, Robotics (January '20)

Honors and Awards

- Outstanding Student Researcher Award - May, 2020
- Aspiring Minds Motivational Award - January 2020
- Only team from India to participate at German RoboCup@Home - May, 2019

Volunteer Experience

- **Secretary for Robotics and Automation Society - IEEE Student Branch** — Amritapuri, India
  Organized events, conducted workshops based on robotics across campus. — *May 2018 - May 2019*