NARATHIP RODWARNA

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EDUCATION

University of Illinois Urbana-Champaign Illinois, USA
Master of Engineering in Autonomy and Robotics January 2023 – December 2024

- Related Coursework: Autonomous Vehicle, Robotics, Computer Vision, Artificial Intelligence, Deep Learning, NLP

Chulalongkorn University Bangkok, Thailand
Bachelor of Engineering in Mechanical Engineering May 2011 – July 2015

- Activities: Engineering Student Committee, Orientation Camp Organizer, Voluntary Camps

SKILLS

Technical Skills: Python, C++, SQL, PyTorch, TensorFlow, ONNX, TensorRT, ROS (including Gazebo, Rviz, MoveIt), OpenCV, Docker, Git, Linux, Shell Scripting, CAD, Jira, xArm, UR3 Robot Arm, CARLA
Development Methodologies: Agile Development, Continuous Integration/Continuous Deployment (CI/CD)
Languages: English (Fluent), Thai (Native), Japanese (Basic – JLPT N4)

PROFESSIONAL & RESEARCH EXPERIENCE

University of Illinois, Distributed Autonomous Systems Laboratory (DASLAB) Illinois, USA
Graduate Student Researcher March 2024 – Present

- Conduct research on an NSF-USDA funded project by developing a system that integrates visual navigation, object detection and visual servoing for an agricultural robot, focusing on system integration of hardware and software components to ensure seamless operation; related hardware includes Nvidia Jetson, Intel NUC and Arduino

Bangkok Mass Transit System Public Company Limited Bangkok, Thailand
Rolling Stock Planning Engineer January 2020 – September 2021

- Conducted commissioning audits to ensure compliance with project requirements and safety standards
- Led maintenance teams in mechanical and electrical maintenance to adhere to operational schedules for the Automated People Mover (APM), ensuring high reliability and availability with fewer than 1 delay case per month

Toyota Daihatsu Engineering & Manufacturing Company Limited Samut Prakan, Thailand
Senior Engineer June 2015 - June 2019

- Collaborated with designers to develop acoustic performance packages during the automotive design and evaluation process, contributing to a newly launched model that achieved a 35% market share
- Tested and validated acoustic performance of vehicles and components through measurement and simulation
- Conducted root cause analysis and applied problem-solving skills to deliver effective solutions for technical issues

RELEVANT PROJECTS

Autonomous Vehicles Perception and Control February 2024 – February 2025

- Applied an Extended Kalman Filter (EKF) for sensor fusion, integrating data from IMU, LIDAR and GNSS sensors to enhance state estimation accuracy
- Registered ZED camera images with LiDAR point clouds for 3D pedestrian detection and tracking on GEM e2
- Executed visual odometry using ORB feature matching and Essential Matrix decomposition to estimate motion
- Applied particle filtering with LiDAR measurements to achieve precise indoor localization
- Implemented a vehicle lateral controller using Pure Pursuit and Stanley methods for distinct scenarios
- Created line detection and line following algorithms leveraging Sobel filtering, image thresholding and line fitting
- Executed a comprehensive motion planning workflow, including behaviour planning (state machine for stop sign handling), path generation (spiral optimization), static collision checking, path selection and velocity profile generation

GE Aerospace Research Collaboration – Visual SLAM Benchmarking and Fusion May 2024 – November 2024

- Implemented trajectory fusion of multiple Visual SLAM algorithms (ORB-SLAM3, OpenVSLAM, LSD-SLAM) using monocular camera data to enhance accuracy and robustness in diverse environments
- Analyzed image features and motion parameters using Vector Autoregression (VAR) to identify potential SLAM failure conditions, contributing to algorithm switching strategies for improved performance

Mask R-CNN for Pulmonary Embolism Detection January 2023 – May 2023

- Trained a Mask R-CNN model for object instance segmentation on CT scan images to detect pulmonary embolism