

Ege YILMAZ

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ISTANBUL

Github link: <https://github.com/ege2097yilmaz>

Abstract

I am a robotic and autonomous software engineer with a strong specialization in SLAM, sensor fusion (lidar-camera), and advanced localization techniques. My expertise includes extended Kalman filters, multiple object tracking, wheel and visual odometry, scan matching, precise sensor calibration for cameras and lidars, and 3D and 2D object detection using deep learning models. I excel in designing and implementing robust path planning and control algorithms for autonomous systems.

My work focuses on developing cutting-edge solutions that integrate state-of-the-art technologies to enable seamless autonomy across various environments. With a deep understanding of robotics pipelines, I am adept at optimizing system performance from perception to control. I am passionate about staying at the forefront of innovation, constantly enhancing robotic capabilities to meet and exceed industry standards. Highly proficient in C++, Cuda, Python, and ROS1/ROS2, I am confident in every step of robotic software development, delivering scalable and efficient solutions for complex challenges.

Education

Pamukkale University

Denizli

Mechanical Engineering Master Degree Education, [GPA: 3.75]

Relevant Coursework:

- Robotic Software Engineering
- Advanced control theory
- Advanced computer vision courses for pointcloud and image datas
- Various robotic projects including master degree thesis (related to outdoor navigation system of a robot)

Pamukkale University

Denizli

Mechanical Engineering Undergraduate Education, [GPA: 2.67]

Relevant Coursework:

- Advanced math theory for engineering
- Automatic control theory
- Mechatronic principles,
- Applied Mathematics for Mechatronics

Experience

Sakarya

Otokar Automotive and Defensive Industry

Autonomous Driving Software Engineer

October 2023 – Nowadays

- Developed sensor fusion algorithms to integrate LiDAR data and camera images for detecting and classifying objects such as pedestrians, cars, and cyclists.
- Designed and implemented a robust Extended Kalman Filter (EKF) algorithm for non-linear estimation, ensuring accurate multiple-object tracking of dynamic objects.
- Optimized algorithm performance using C++ and GPU programming with CUDA to accelerate perception algorithms, such as voxel filtering and grid map processing.

- Designed and developed localization algorithms using sensor fusion techniques, combining IMU, wheel odometry, and visual odometry data for precise vehicle positioning.
- Contributed to SLAM development, focusing on efficient map construction and real-time localization.
- Trained deep learning models for 3D and 2D object detection, leveraging advanced neural networks for autonomous driving perception tasks.
- Documented and presented algorithm designs, system architectures, and performance metrics to stakeholders, ensuring transparency and alignment with project goals.

Phobos Robotic
İzmir/İstanbul

Robotic Software Engineer

November 2022 – October 2023

- Developed and implemented the Vector Field Histogram (VFH) algorithm in an autonomous delivery robot project, ensuring efficient navigation through cluttered factory environments
- Integrated VFH with a combining LIDAR and camera data for enhanced obstacle detection and avoidance
- Utilized the Cartographer SLAM algorithm to enhance the navigation and mapping capabilities of Autonomous Mobile Robots
- Successfully integrated LIDAR and IMU data to create accurate and reliable maps, improving the robot's localization

NCT Robotic

Denizli

Robotic Software Engineer

October 2020 – October 2022

- Designed, developed, and tested software for indoor robotic systems, focusing on planning, perception and control
- Conducted thorough testing and validation of robotic software in both simulation and real-world environments
- Improved localization systems by integrating data from IMU, LIDAR matching algorithm and encoders, resulting in more accurate positioning
- Developed and implemented various planning algorithms (Dynamic Window Approach, Time elastic Band Local Planner) and writing academic articles
- Developed object detection algorithm utilizing Tensorflow Object detection API.
- Developed GUI interface for robots
- Using arm architecture based NVIDIA platforms (Jetson TX2, Jetson Xavier)

Skills & Interests

Technical: C++ (Advanced), Python (Advanced), Matlab (Beginner), Tensorflow, Pytorch, Opencv, PCL, ROS1/ROS2, STM32 (Beginner), Embedded Linux, SLAM, localization, Bayes Algorithms, Carla, Gazebo, Sensor fusion, Sensor calibration, Monocular and stereo cameras, GNSS, IMU, Visual odometry, Cuda, Gpu programming, Model predictive control, system modeling.

Interests: Playing guitar and drum, scuba diving, playing soccer, following newspapers and science magazines, space observations