Grigoriy Dubrovskiy

Philadelphia, PA • Grigoriy@duck.com
LinkedIn.com/in/GDubrovskiy, webpage: GDubrovskiy.github.io, projects: GDubrovskiy.github.io/Projects-2017.html

PROFESSIONAL SUMMARY

- Robotics and Software Engineer with 6+ years of applied experience in autonomous driving, mobile robotics and motion planning in industrial and academic settings
- Software development breadth across motion planning, embedded systems, control systems, scripting and automated testing

EXPERIENCE

Motional (formerly nuTonomy and then Aptiv) **Pittsburgh, PA → Boston, MA → Philadelphia, PA**

Senior Software Engineer – Motion Planning – Trajectory Scoring and Selection August 2022 – present

- Led a team of 4 people in development of Trajectory Scoring to prioritize Safety and Comfort, among diverse trajectory types
- Implemented Trajectory Scoring for a Safety Subsystem, considering Safety aspects only
- Implemented Trajectory Correction to account for a newer Vehicle Pose, compensating the delay to generate a trajectory
- Improved the Lane Change State Machine for performing Lane Changes efficiently & predictably to other road users
- Oversaw creation of a hybrid design and introduction of ML Scorer into a Rule-based Trajectory Scoring
- Optimized resource utilization (manually and automatically monitoring latencies, and apply fixes; CPU and memory usage, etc): e.g. achieved a 4-fold runtime memory usage reduction for a Safety Subsystem
- Led review of weekly performance of deployed software and created tactical or strategic improvement plans based on that data
- Worked across teams on submodule designs (creating and reviewing; breaking down designs into actionable steps with timelines)
- Acted as designated Quality Software Reviewer for Planning team, helping to maintain extremely high software standards and mentor team members in best practices
- Conducted 30+ technical interviews and worked on refining job descriptions to identify strong candidates
- Introduced company-wide no-cheat (no spillover) code coverage

Senior Software Engineer – Embedded Software April 2021 – August 2022

- Implemented sensor readers in C++14 for POSIX systems, reading data over Ethernet and CAN (radars and cameras)
- Worked with ECUs (Aurix TC397, TC399): programming in C99, flashing, debugging
- Served as software/implementation POC for Functional Safety (ASIL) and CyberSecurity compliance

Software Engineer III August 2019 – March 2021

- Implemented Safety Subsystem's components, running on RTOS (QNX)
- Implemented sensor readers, reading data over Ethernet, CAN, proprietary communication protocols (e.g. radar reader)
- Software packaging with Conan (simplifying inter-dependencies between sub-projects, debugging packaging, CI, build process)
- Served as a Release Manager for a Safety Subsystem
- Implemented visualization tools with Qt/QML and OpenSceneGraph for visualizing data captured by AVs

Autonomous Driving Systems Engineer – Test & Verification January 2018 – July 2019

- Developed scripts in Python & Bash for connecting to autonomous vehicles and storage units for transmitting and processing data
- Implemented algorithms in C++/Python/Bash for transmitting and saving data on Autonomous Vehicles in different formats
- Significantly improved Software delivery and Conan packaging processes for several C++ subsystems
- Participated in code peer-reviewing in a large team, legacy code maintenance, interviewing and training new engineers

UNIVERSITY OF NOTRE DAME **Notre Dame, IN**

Graduate Research Assistant July 2015 – January 2018

- Developed algorithms in C/C++ for drones (Autoquad M4, AQ6) for flying missions and for ground robots (Pioneer 3AT, 3DX)
- Developed algorithms in C++ in Linux environment for Optimized Integrated Task and Motion Planning (used MILP and SMT)
- Implemented autonomous navigation system in C++ with formally proven collision avoidance in a dynamic environment
- Developed primitive actions (e.g. "Pick Up an object") in C++ for a ground robot, using a web camera for color recognition
- Prototyped algorithms with Sampling-based Motion Planning approaches (e.g. RRT), using Open Motion Planning Library

INFINEON TECHNOLOGIES AUSTRIA AG **Villach, Austria**

Engineer (Intern at Power Management Systems Department) **Jan 2015 – July 2015**

- Designed Control Systems for low voltage power converters (simulations performed in Cadence Virtuoso, VerilogA and Matlab)

DEVELOPMENT SKILLS

languages, environments: C++14/C++20 (6y), **Python (6y)**, C (7y), Bash (7y), Linux (8y), QNX (0.5y), ROS (3y), SQL, Qt (1y)
dev tools: Git (8y), Docker (6y), Ethernet (2y), CAN (1y), CMake (4y), Bazel (2y), Conan (1.5y), MATLAB (6y), AppImage (1y), Jenkins (6y), GitLab CI (1y), JIRA (6y), CPLEX (1y), OpenCV, CAD, OMPL, MoveIt!

EDUCATION

UNIVERSITY OF NOTRE DAME **Notre Dame, IN**

Master of Science in Electrical Engineering January 2018

- Research Area: Autonomous Task and Motion Planning for Mobile Robots

SAINT PETERSBURG ELECTROTECHNICAL UNIVERSITY (SPb ETU) **Saint Petersburg, Russia**

Master of Science in Control Systems (Automation and Control of Industrial Complexes and Mobile Objects) July 2015

CERTIFICATIONS

- DDS Training from RTI (Data Model, Architecture, QoS, Configuring Transports, Keys, Instances, etc) March 2022
- QNX Training (Architecture, Process & Thread Synchronization, IPC, Boot Image generation, profiling, etc) March 2020
- MICROSAR Safe (Functional Safety, Memory Protection, Program Flow Control, Safe E2E, SafeRTE) November 2020
- MICROSAR CyberSecurity (Basics of Cryptography, AutoSAR Crypto Stack, Secure OnBoard Comms, HSM) December 2020
- MICROSAR Ethernet (Basics of Ethernet and TCP/IP, Ethernet in AUTOSAR, SOME/IP, etc) May 2021
- AWS Certification (Running Container-Enabled Microservices on AWS) May 2019

PATENTS (PRIMARY AUTHOR)

- US11904893B2 Operating a vehicle (passenger's comfort) December 2021
- US11835948B2 Systems and methods for improving vehicle operations using movable sensors November 2019