

# Grigoriy Dubrovskiy

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[LinkedIn.com/in/GDubrovskiy](https://www.linkedin.com/in/GDubrovskiy), webpage: [GDubrovskiy.github.io](https://GDubrovskiy.github.io), projects: [GDubrovskiy.github.io/Projects-2017.html](https://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)
- 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)
- Created Quarterly Plans and Retros for a team, provided weekly updates on OKRs to other teams and Directors
- 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

- C++14/C++20 (6y), Python (6y), Git (8y), Linux/Ubuntu (8y), Docker (6y), QNX (0.5y), [Ethernet](#) (2y), [CAN](#) (1y), CMake (4y), Bazel (2y), C (7y), Conan (1.5y), Bash (7y), Jenkins (6y), GitLab CI (1y), JIRA (6y), [SQL](#), MATLAB (6y), Qt (1y), CPLEX (1y), ROS (3y), ApptImage (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

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- 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)

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