Pete LeVasseur

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ABOUT

Staff software and algorithm engineer that has worked with platforms as diverse as mainframes to microcontrollers. Able to guide conversations around requirements and specifications to resolution. Mentors and grows engineers to build strong teams. Geek about programming languages, currently Rust.

MANAGEMENT SKILLS

Team Leadership| Project Management | Global Cross-functional Collaboration| Strategic Planning |Resource Management | Team Building | Innovation Management |Product Development | Agile | Scrum

TECHNICAL EXPERTISE

- **Programming Languages:** Rust, C++, and experience with microcontroller software, and integrating various systems.
- **Software Development:** Development of middleware protocols (e.g., uProtocol, uStreamer), Algorithm design and implementation (Localization stack, RADAR fusion), and SW architecture design (UltraCruise Localization tech-stack).
- **Systems and Platforms:** Safety-critical software development, Linux, QNX, bare metal, LiDAR systems and RADAR fusion, map-based lane centering, and middleware integration.
- **Research and Development:** Automotive industry research on Rust for safety-critical software, rigorous product development processes and proving value propositions for new technologies.

WORK EXPERIENCE

Technical Lead, General Motors, USA **May 2024 – August 2024**

- Led the GM Rust Working Group, driving the successful adoption of Rust for development at General Motors and overseeing the efficient distribution of software artifacts (Rust crates) within the company.
- Developed critical components of the uProtocol middleware protocol in Rust, collaborating with open-source contributors from ZettaScale, Microsoft, Bosch, and General Motors. Key achievements included designing uStreamer, a network switch-like component, and SOME/IP uTransport, a module for exposing the uProtocol API on top of COVESA vsomeip.

Lead Software Engineer, General Motors, USA **November 2021 – May 2024**

- Initiated the mainstreaming of Rust for safety-critical software at General Motors by conducting extensive industry research to validate its benefits, including the elimination of memory bugs and improved engineer productivity. Conducted hands-on work to demonstrate Rust's usability on the ACP3.x platform using a toolchain provided by QNX and Elektrobit.
- Designed the software architecture for the new Scene Creator module based on the outcomes of the UltraCruise Re-Arch Workshop. Guided the team in implementing features within a tight six-month timeline, leading to successful project completion.
- Collaborated with a diverse team from Technical Center Israel to perform critical optimizations ahead of a senior leadership demo. Achieved a reduction in syscalls to the microkernel (from 2.4 cores to 1.4 cores) and stabilized publish rates. Reclaimed 40-70% of CPU utilization by optimizing key functions through the C++ Eigen library's in-place memory operations.

Technical Lead, General Motors, USA **December 2019 – November 2021**

- Designed an algorithm in collaboration with R&D Staff Researcher to utilize map and perception data, including lane edge type and color, to enhance the uptime of the UltraCruise Localization stack in geometrically ambiguous situations. Innovation led to the submission and granting of a patent.
- Collaborated with GNSS Technical on evaluating a potential vendor solution called VEPP (Visual Enhanced Precise Positioning), which combines VIO, GNSS, and INS technologies to improve pose accuracy in dense urban environments. Through vehicle testing, we concluded that the solution provided limited benefits compared to our existing map and perception-based localization methods outside of urban canyon scenarios.

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Technical Project Manager, General Motors, USA **July 2018 – December 2019**

- Lobbied successfully to bring several researchers onto our engineering team for the kickoff of UltraCruise, leveraging their expertise from the Horizon project, which involved similar Automated Vehicle technology.
- Collaborated with Technical Center Israel to establish the initial tech stack for UltraCruise Localization, ensuring it integrated effectively with Map Services, Perception, Planning, and Controls systems.

Senior Software Engineer, General Motors, USA **July 2017 – July 2018**

- Developed lab test automation software for benchmarking different LiDAR systems by converting verbal requests into a detailed requirements document with prioritized deliverables.
- Led the in-housing effort to test and implement an automated driving system, overseeing the transition and evaluation processes through extensive code and literature review.

Senior Software Engineer, Continental, USA **May 2015 – July 2017**

- Designed and implemented software architecture and managed vehicle build processes for a RADAR fusion demonstrator vehicle.
- Adapted production RADAR microcontroller software to interface with customer CAN systems, enabling integration of vehicle dynamics input and RADAR object list output resulting in successful customer acquisition.
- Developed an application to interface with the Surround View camera system, allowing for customization of camera views for research and study purposes with an academic partner.

Software Engineer II, DENSO International America, Inc **July 2013 – May 2015**

- Transferred and integrated DENSO Japan's middleware and software stack into the local office, successfully incorporating it into the vehicle systems through collaboration with Japan colleagues and use of Japanese language skills.
- Conducted benchmarking of HD Maps and RTK GPS systems to evaluate their performance and accuracy.
- Developed interfaces and map-matching algorithms to support map-based lane centering functionality.

Mainframe Software Engineer Intern, Compuware Corporation, USA **June 2012 – August 2012**

- Enhanced the bug tracking system to support multiple versions of the product line within a single interface, streamlining issue tracking for software development and quality assurance teams.

AWARDS

- **Critical Technical Talent, General Motors:** Recognized for exceptional contributions and technical expertise that significantly advanced the company's engineering initiatives.
- **Gold Award, Continental:** Honored for playing a pivotal role in securing key customer acquisitions, demonstrating outstanding performance and impact in the automotive industry.
- **Presidential Scholarship, Oakland University:** Recipient of full-ride presidential scholarship for BSc program.

EDUCATION

- **MSc in Computer Science, Oakland University 2014** (Funded via Research Assistantship)
- **BSc in Computer Science, Oakland University 2011** (Presidential Scholarship)

LANGUAGES

- **English:** Native speaker (U.S. citizen)
- **Japanese:** Advanced fluency in reading, writing, listening, and speaking. Scored in the 98th percentile on the Japanese Language Proficiency Test (JLPT) N1, the highest level of certification.