James **Servos**

Engineering R&D Leader · Autonomy and Robotics

Kitchener, Ontario, Canada

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Summary

Dynamic and accomplished Engineering Leader with over a decade of hands-on experience building robotics products from the ground up, coupled with a profound passion for research and innovation. With a proven track record of delivering cutting-edge robotic systems, I thrive at the intersection of rigorous engineering deveopment and applied academic research. Eager to bring my expertise to a forward-thinking organization committed to pushing the boundaries of technology in the field of robotics.

Work Experience

OTTO by Rockwell Automation — *Kitchener, Canada*

Director, Mobile Robotics Technology — *2024–Present*

- Develop, lead and manage execution of R&D programs in the areas of navigation, planning, perception, mapping, deep learning, reinforcement learning, and generative AI
- Create comprehensive strategic roadmaps for robotics R&D which have direct impact on advancing mobile robotics and deliver tangible value in real world application.

Locus Robotics — *Willmington, USA (Remote)*

Director, Robotics Software — *2023–2024*

- Responsible for all aspects of robotics software development including direct management, technical oversight and design review.
- Develop release plans, priorities, roadmaps, define program objectives and ensure projects stay on track both technically and managerially.
- Oversee the six teams that build all aspects of the robot software stack, Localization & Mapping, Perception, Planning & Control, Platform, Tools, and Simulation & Testing.

Director, Robot Software Program Management and Core Perception — *2023–2023*

- Lead product owner and technical leader respondible for leading, developing, and planing the portfolio of software and technologies which enable autonomous, intelligent, and efficient operation of Locus robots.
- Create and maintaining release plans, development processes, roadmaps, and strategic initiatives to ensure the success of the Robot Software.

Clearpath Robotics — *Kitchener, Canada*

Director, Perception — *2022–2023*

- Developing and managing strategic initiatives to push the state-of-the-art in robot perception technologies for industrial indoor robots.
- Create and plan perception projects and technology roadmaps for industrial vehicle autonomy.
- Manage research initiatives with both internal stakeholders as well as external academic and industrial partners.

Autonomy Engineering Mananger - Perception — *2018–2022*

- Design and architect perception software across breadth of perception areas.
- Scaling the team and technoloy to support rapid growth and adapt to continuously changing state-of-the-art
- Lead the introduction, development, and integration of machine learning technology into the robotics stack.

Perception Team Leader — *2016 – 2018*

- Develop and lead a team of highly talented developers to create state-of-the art algorithms for robotics perception, computer vision, and SLAM.
- Develop perception software and features to push the bounds on the reliability, efficiency, and intelligence of our industrial vehicle solutions.

Senior Autonomy Engineer — *2015 – 2016*

- Design, architect, and develop cutting-edge autonomy software for industrial mobile robotics specializing in perception for mobile robotics including, SLAM, obstacle detection, target tracking, image processing, and long term robust autonomy.
- Handled challanging use cases such as highly dynamic unstructured environments and near continuous up time within the industrial setting.

Autonomy Engineer — *2014 – 2015*

- Development of autonomy software and systems for custom industrial robotics applications and systems.
- Architect and developed the core autonomy software that would become the basis for OTTO Motors platforms

Waterloo Autonomous Vehicles Laboratory - University of Waterloo — *Waterloo, Canada*

Graduate Student Researcher — *2012–2014*

Research In Motion — *Waterloo, Canada*

Embedded Systems Software Developer — *2011-2012*

Comittees

Canadian Robotics Council — *Canada*

Research and Training Committee — *2022–Present*

- Identify and share common challenges and opportunities for Canadian robotics researchers and educators
- Facilitate coordinated efforts with industry and the government to stimulate collaborations between larger groups of Canadian roboticists.

NSERC Canadian Robotics Network — *Canada*

Steering and Scientific Review Committee — *2019–2023*

- Coordination of research themes, allocation of resources and acceptance of network members for NCRN

Education

University of Waterloo — *Waterloo, Canada*

Master of Applied Science in Mechatronics Engineering — *Sept. 2012 - August 2014*

University of Waterloo — *Waterloo, Canada*

Batchelor of Applied Science in Mechatronics Engineering — *Sept. 2007 - April 2012*

publications

patents

Systems and methods for updating an electronic map
James Servos, Ryan Gariepy
US20190186923A1, Issued Jan 17, 2023

Systems and methods for monitoring an operation of one or more self-driving vehicles
James Servos, Ryan Gariepy, Guillaume Autran, Jin-Myung Won, Shahab Kaynama
US20210370960A1, Filed Jan 29, 2021

Method, system and apparatus for handling operational constraints for control of unmanned vehicles
James Servos, Ryan Gariepy, Alex Bencz, Andrew Blakey, Shahab Kaynama
US20160349749A1, Issued March 19, 2019

Method, system and apparatus for path control in unmanned vehicles
James Servos, Ryan Gariepy, Alex Bencz, Yan Ma, Michael Irvine, Shahab Kaynama, Peiyi Chen
US20170197643A1, Issued May 8, 2018

Method, system and apparatus for self-driving vehicle obstacle avoidance
James Servos, Ryan Gariepy, Alex Bencz, Yan Ma, Michael Irvine, Shahab Kaynama, Peiyi Chen
US20180186391A1, Issued Oct 27, 2020

Autonomous material transport vehicles, and systems and methods of operating thereof
James Servos, Ryan Gariepy, Nolan Lunscher, Enrique Fernandez
US20210087031A1, Filed Jan 29, 2021

Systems and methods for operating one or more self-driving vehicles
James Servos, Ryan Gariepy, Yvan Rodrigues, Matthew Lord, Ivor Wanders, Jason Mercer, Roydyn Clayton
US20220073062A1, Filed Sept 9, 2021

article in peer-reviewed journal

Multi-Channel Generalized-ICP: A robust framework for multi-channel scan registration
James Servos, Steven L Waslander
Robotics and Autonomous systems 87 (2017) pp. 247–257. Elsevier, 2017

Mapping, Planning, and Sample Detection Strategies for Autonomous Exploration
Arun Das, Michael Diu, Neil Mathew, Christian Scharfenberger, James Servos, Andy Wong, John S Zelek, David A Clausi, Steven L Waslander
Journal of Field Robotics 31.1 (2014) pp. 75–106. Wiley Online Library, 2014

international peer-reviewed conferences/proceedings

POV-SLAM: Probabilistic object-aware variational slam in semi-static environments
Jingxing Qian, Veronica Chatrath, James Servos, Aaron Mavrinac, Wolfram Burgard, Steven L Waslander, Angela P Schoellig
Robotics Science and Systems (RSS), 2023

POCD: probabilistic object-level change detection and volumetric mapping in semi-static scenes
Jingxing Qian, Veronica Chatrath, Jun Yang, James Servos, Angela P Schoellig, Steven L Waslander
Robotics Science and Systems (RSS), 2022

Multi-channel GICP
James Servos, Steven L Waslander
IEEE International Conference on Robotics and Automation (ICRA), 2014

Using RGB Information to Improve NDT Distribution Generation and Registration Convergence
James Servos, Steven L Waslander
International Conference on Intelligent Unmanned Systems (ICIUS), 2014

3D scan registration using the Normal Distributions Transform with ground segmentation and point cloud clustering
Arun Das, James Servos, Steven L Waslander
IEEE International Conference on Robotics and Automation (ICRA), 2013

Underwater stereo SLAM with refraction correction
James Servos, Michael Smart, Steven L Waslander
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2013