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

Locus Robotics

Willmington, USA (Remote)

Director, Robotics Software — *2024–Present*

- 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 — *2023–2024*

- 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, technical roadmaps, and strategic initiatives to ensure the success of the Robot Software division.

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.
- Design and architect perception software across a wide breadth of perception applications.

Autonomy Engineering Mananger - Perception — *2018–2022*

- Continued responsible for a growing team of high skilled team developing perception developers.
- 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 state-of-the-art 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.
- Architected 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 focuses on improving SLAM methods by incorporating multi-channel information from non-homogeneous sensor configurations

Research In Motion

Waterloo, Canada

Embedded Systems Software Developer — *2011-2012*

- Developed sensor drivers and DSP algorithms for mobile phone products.

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 while promoting international partnerships.

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
J. Servos, R. Gariepy
US20190186923A1, Filed Jan 17, 2023

Systems and methods for monitoring an operation of one or more self-driving vehicles
J. Servos, R. Gariepy, G. Autran, J.-M. Won, S. Kaynama
US20210370960A1, Filed Jan 29, 2021

Method, system and apparatus for handling operational constraints for control of unmanned vehicles
J. Servos, R. Gariepy, A. Bencz, A. Blakey, S. Kaynama
US20160349749A1, Issued March 19, 2019

Method, system and apparatus for path control in unmanned vehicles
J. Servos, R. Gariepy, A. Bencz, Y. Ma, M. Irvine, S. Kaynama, P. Chen
US20170197643A1, Issued May 8, 2018

Method, system and apparatus for self-driving vehicle obstacle avoidance
J. Servos, R. Gariepy, A. Bencz, Y. Ma, M. Irvine, S. Kaynama, P. Chen
US20180186391A1, Issued Oct 27, 2020

Autonomous material transport vehicles, and systems and methods of operating thereof
J. Servos, R. Gariepy, N. Lunscher, E. Fernandez
US20210087031A1, Filed Jan 29, 2021

Systems and methods for operating one or more self-driving vehicles
J. Servos, R. Gariepy, Y. Rodrigues, M. Lord, I. Wanders, J. Mercer, R. Clayton
US20220073062A1, Filed Sept 9, 2021

article in peer-reviewed journal

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

Mapping, Planning, and Sample Detection Strategies for Autonomous Exploration
A. Das, M. Diu, N. Mathew, C. Scharfenberger, J. Servos, A. Wong, J. S. Zelek, D. A. Clausi, S. 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
J. Qian, V. Chatrath, J. Servos, A. Mavrinac, W. Burgard, S. L. Waslander, A. P. Schoellig
Robotics Science and Systems (RSS), 2023

POCD: probabilistic object-level change detection and volumetric mapping in semi-static scenes
J. Qian, V. Chatrath, J. Yang, J. Servos, A. P. Schoellig, S. L. Waslander
Robotics Science and Systems (RSS), 2022

Multi-channel GICP
J. Servos, S. L. Waslander
IEEE International Conference on Robotics and Automation (ICRA), 2014

Using RGB Information to Improve NDT Distribution Generation and Registration Convergence
J. Servos, S. 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
A. Das, J. Servos, S. L. Waslander
IEEE International Conference on Robotics and Automation (ICRA), 2013

Underwater stereo SLAM with refraction correction
J. Servos, M. Smart, S. L. Waslander
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2013