

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 development 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

Wilmington, USA (Remote)

DIRECTOR, ROBOTICS SOFTWARE

2023–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

2023–2023

- Lead product owner and technical leader responsible 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 MANAGER - PERCEPTION

2018–2022

- Continued responsibility for a growing team of highly skilled perception developers.
- Design and architect perception software across breadth of perception areas.
- Scaling the team and technology 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 challenging 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 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

MASTER OF APPLIED SCIENCE IN MECHATRONICS ENGINEERING

Waterloo, Canada

Sept. 2012 - August 2014

University of Waterloo

BACHELOR OF APPLIED SCIENCE IN MECHATRONICS ENGINEERING

Waterloo, Canada

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 Mavrinnac, 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