James Servos

Autonomy Engineering Leader

contact

909 Rush Meadow Crt
Kitchener, Ontario
N2R 1K9
Canada

+1 (519) 574 1772

servos@gmail.com
LinkedIn
GitHub

key skills

mobile robotics
AI
perception
machine learning
localization
SLAM
computer vision
sensors

programming

C/C++
Python
Lua

technology

LIDAR
stereo vision
catadioptric cameras
IMU
CUDA
AWS

libraries

ROS
PCL
TensorFlow
Eigen
g2o
gtsam
OpenCV
SQL

summary

Talented engineering manager with a passion for autonomous mobile robotics, and a background in both hardware level coding and professional software development. Highly experienced with state-of-the-art robotics, perception, and SLAM technologies having completed numerous robotics projects, research initiatives, and publications.

experience

2019–Present **NSERC Canadian Robotics Network** Canada

Steering and Scientific Review Committee

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

2012–Present **Clearpath Robotics** Kitchener, Canada

Autonomy Engineering Mananger

- Managing strategic initiatives in robot perception for industrial indoor robots.
- Develope perception technology road map for vehicle autonomy innovation.
- Manage research initiatives with internal, academic and industrial partners.
- Design and architect perception software across breadth of perception areas.
- Lead a highly skilled group responsible for all robot perception work in the product

Perception Team Leader

- Lead a team of highly talented developers to create state-of-the art algorithms for robotics perception, computer vision, SLAM, and more.
- Direct contributor to the autonomy perception software developing and architecting perception features to push the bounds on the reliability, efficiency, and intelligence of our industrial vehicle solutions.

Senior Autonomy Engineer

- 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

- Development of autonomy software and systems from the ground up for real world robotics applications.
- Architected and developed the fundemental autonomy software that would become the basis for OTTO Motors division

2012–2014 **Waterloo Autonomous Vehicles Laboratory - University of Waterloo** Waterloo, Canada

Graduate Student Researcher

- Research focuses on improving SLAM methods by incorporating multi-channel information from non-homogeneous sensor configurations

2011-2012 **Research In Motion** Waterloo, Canada

Embedded Systems Software Developer

- Developed sensor drivers for mobile phone products.
- Implemented sensor DSP algorithms to improve performance

2010 **Research in Motion** Waterloo, Canada

Advanced User Interfaces Developer

2010 **Sandvine Inc** Waterloo, Canada

Firmware Engineering Co-op

publications

patents

Systems and methods for updating an electronic map
James Servos, Ryan Gariepy
US20190186923A1, Filed Nov 11, 2018

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 Dec 1, 2016

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 Jul 13, 2017

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 May 25, 2016

Stand-alone self-driving material-transport vehicle
James Servos, Ryan Gariepy, Jason Scharlach, Andrew Blakey, Simon Drexler
US20190360835A1, Filed Aug 13, 2019

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

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

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

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

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

education

2012–2014 **Master** of Applied Science — University of Waterloo
Improving SLAM methods by incorporating multi-channel information

2007–2012 **Bachelor** of Applied Science — University of Waterloo
Mechatronics Engineering