James Servos

Mobile Robotics Researcher

contact

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LinkedIn
GitHub

key skills

mobile robotics
perception
SLAM
vision
sensors

programming

C/C++
Matlab
Python
Java

technology

LIDAR
stereo vision
catadioptric cameras
IMU
CUDA

libraries

ROS
PCL
Eigen
g2o
OpenCV

summary

Talented software engineer 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

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

Spring 2012 **Research In Motion** Waterloo, Canada
Embedded Systems Software Developer
- Developed sensor drivers for mobile phone products.
- Implemented sensor DSP algorithms to improve performance

Fall 2010 **Research in Motion** Waterloo, Canada
Advanced User Interfaces Developer
- Developed automated testing and data analysis setups and scripts
- Performed hardware validation on prototype devices

Winter 2010 **Sandvine Inc** Waterloo, Canada
Firmware Engineering Co-op
- Improved and debugged features of high bandwidth deep packet inspection and network policy control firmware.

Spring 2009 **Kaleidescape Inc** Waterloo, Canada
Hardware Engineering Co-op
- Debugging electrical hardware problems and applied solutions
- Completed thermal analysis and characterization of new product

Fall 2008 **Kaleidescape Inc** Waterloo, Canada
Software Engineering Co-op
- Developed and debugged features of the high-level applications layer
- Improved components of the software network infrastructure

projects

2012–2014 **NASA Sample Return Robot Challenge** University of Waterloo Robotics Team
Mapping and Localization Team Lead
- Developed state-of-the-art simultaneous localization and mapping (SLAM) techniques
- Designed novel integrated vision & LIDAR mapping and localization methods
- Integrated and improved multiple proven methods to ensure robust SLAM solutions

2009–2010 **Intelligent Ground Vehicle Competition** University of Waterloo Robotics Team
Software Team Lead
- Implemented advanced planning, estimation, and vision algorithms
- Designed and prototyped main electronics control board for the robot

2008–2009 **Autonomous Landmine Removal (ALARM)** University of Waterloo Robotics Team
Junior Project Member
- Fabricated and assembled the Kodiak robots for the multi robot system
- Provided design input on robot construction for redesign improvements
- Prototyped and tested electronic control boards and electronics

2008–2010 **Autonomous Mini-Sumo Robot** University of Waterloo Robotics Team
Technical Organizer
- Designed autonomous mini-sumo robot competition, including skeleton designs
- Organized and mentored competitors of competition

2009–2010 **Federation Orientation Committee** University of Waterloo
Federation Orientation Committee Member
- Organized, and implemented the University of Waterloo Orientation Week 2011
- Led and organized over 300 volunteer leaders and over 6000 first year students

publications

article in peer-reviewed journal

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

awards

2013 **NSERC Alexander Graham Bell Canada Graduate Scholarship** Natural Sciences and Engineering Research Council
Awarded to high caliber scholars with a high standard of achievement

2013 **Mechanical & Mechatronics Engineering Teaching Assistant Award** University of Waterloo
Awarded to Teaching Assistants judged to be outstanding

2011 **Arther F. Church Award** University of Waterloo
Awarded for outstanding academic and extracurricular performance in Mechatronics