

Stewart C. Jamieson

GRADUATE STUDENT · AUTONOMOUS ROBOTS & MACHINE LEARNING

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A roboticist working to invent autonomous vehicles that can co-operate with humans in uncertain, unstructured, and unknown environments and accomplish their objectives safely and efficiently.

Education

Massachusetts Institute of Technology & Woods Hole Oceanographic Institute

Cambridge, MA, USA

S.M./PH.D. IN AERONAUTICS AND ASTRONAUTICS (5.0/5.0 CGPA) — MARINE ROBOTICS

June 2018 - Present

- Co-supervised by Dr. Yogesh Girdhar (WHOI) and Prof. Jonathan How (MIT)
- Developing algorithms for robot-based autonomous scientific exploration of highly remote environments (e.g. Mars, oceans)
- Focus on developing robots that can robustly achieve their operator's objectives in unfamiliar and dynamic environments
- Relevant Coursework: *Cognitive Robotics, Bayesian Modelling and Inference, Theory of Intelligence*

University of Toronto

Toronto, ON, Canada

B.A.SC. IN ENGINEERING SCIENCE (3.83/4.0 CGPA) — ROBOTICS MAJOR

Sept. 2013 - Apr. 2018

Thesis: *Deep Learning for Robust Vision in Realtime Autonomous Driving*, supervised by Prof. Angela Schoellig

Work & Research Experience

WHOI's Autonomous Robotics and Perception Laboratory (WARPLab)

Woods Hole, MA, USA

GRADUATE RESEARCH ASSISTANT

June 2018 - Present

- Developing autonomous exploration algorithms for robot teams operating in the Benthic zone
- Publications focus on enabling robot co-operation with humans over very limited communication channels
- Assisting with the deployment of these novel algorithms into WHOI's world-class deep sea exploration vehicles (e.g. Sentry)

Zebra Technologies Inc.

Mississauga, ON, Canada

SOFTWARE ENGINEERING INTERN, ENGINEERING PRODUCT INNOVATION TEAM

May 2016 - Aug. 2017

- Helped to research and present business applications for robotics, machine learning, and neural networks
- 16 months of development experience in C++14 including networking, data processing, and multithreaded computing

Wattpad Inc.

Toronto, ON, Canada

ANDROID SOFTWARE DEVELOPER, READER ACQUISITION TEAM

May 2015 - Sept. 2015

- Wattpad is a worldwide storytelling platform with a community of over 80 million users
- Implemented features designed to attract new users; also implemented A/B tests to validate each features' success

QA SOFTWARE DEVELOPER, ANDROID CORE TEAM

May 2014 - Sept. 2014

- Searched for, reported, and fixed software bugs in the Android mobile application with over 15 million users
- Designed and implemented a virtual doorman to greet company visitors and notify staff of their arrival

Professional Activities

aUToronto Self-Driving Car Team

University of Toronto, Canada

SOFTWARE TEAM LEAD

June 2017 - June 2018

- Led a subteam of 12 graduate and undergraduate students working to develop an autonomous Chevrolet Bolt
- My team created the overall system software architecture, sensor drivers, vehicle control interface, and software services
- At the end of my term, aUToronto won 1st place in Year One of the SAE/GM AutoDrive Challenge

Zebra Technologies Inc.

Mississauga, ON, Canada

EDITOR, EMC INNOVATION NEWSLETTER

May 2016 - Aug. 2017

- Edited bi-monthly department newsletter and distributed it to over 1700 engineers
- Commissioned, reviewed, and published articles about recent trends and innovations in electronics, robotics, etc.

Graduate Student Member

Worldwide

IEEE (INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS)

Nov. 2013 - Present

Peer-Reviewed Publications

[In Review] **Jamieson, S.**, How, J.P., Girdhar, Y. (2020). *Active Reward Learning for Co-Robotic Vision Based Exploration in Bandwidth Limited Environments*. Submitted to IEEE International Conference on Robotics and Automation.

Girdhar, Y., Cai, L., **Jamieson, S.**, McGuire, N., Flaspohler, G., Suman, S., & Claus, B. (2019). *Enabling Co-Robotic Scientific Exploration of Unknown Environments over a Low Bandwidth Communication Channel*. In IEEE International Conference on Robotics and Automation (ICRA). Montréal, Canada.

Jamieson, S. (2019). *The Pervasiveness of Deep Learning in Robotics Research Does Not Impede Scientific Insights into Robotics Problems*. “Debates on the Future of Robotics Research” Workshop at ICRA 2019. Montréal, Canada.

Other Publications

Jamieson, S. (2018). *Deep Learning for Robust Vision in Realtime Autonomous Driving*. B.A.Sc. Thesis, University of Toronto.

Presentations

Videos and other materials used in some of the following presentations are available at www.stewartjamieson.com

Deep Learning Does Not Impede Scientific Insights into Robotics Problems

[Montréal, QC, Canada](#)

PRESENTER AT THE DEBATES ON THE FUTURE OF ROBOTICS RESEARCH, ICRA 2019

May 2019

- Presented an accepted talk arguing that deep learning is a tool, rather than an obstacle, for making scientific insights into robotics problems and their solutions. See the IEEE RA-M Paper: <https://ieeexplore.ieee.org/document/8825887>

Multi-Robot Adaptive Sampling

[Cambridge, MA, USA](#)

CO-PRESENTER IN LECTURE AT MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Apr. 2019

- Co-presented a lecture on multi-robot adaptive sampling techniques and robotics applications

An Introduction to Neural Networks and Machine Learning

[Mississauga, ON, Canada](#)

CO-PRESENTER FOR ZEBRA TECHNOLOGIES INC. “LUNCH & LEARN”

Jan. 2017

- Introduced the fundamental concepts of neural networks & machine learning to over 200 engineers
- Shared results of a research investigation into relevant business applications of neural networks

Should Robots Have Rights?

[Toronto, ON, Canada](#)

CO-PRESENTER IN DEBATE AT THE UNIVERSITY OF TORONTO

Dec. 2015

- Participated in a debate to affirm that sufficiently “intelligent” robots should be awarded basic rights

A Customized Graphical Checklist for Efficient Ambulance Inventory

[Toronto, ON, Canada](#)

CO-PRESENTER IN “PRAXIS II SHOWCASE” AT THE UNIVERSITY OF TORONTO

Apr. 2014

- Developed a low-cost, computer-generated checklist to improve efficiency for resupplying ambulance inventory
- Presented results of a 3-month engineering team design project to attending professors, paramedics, and CBC Radio

Honors & Awards

INTERNATIONAL

2018 **1st Place Team**, SAE/GM AutoDrive Challenge

[Yuma, AZ, USA](#)

DOMESTIC

2018 **Dean’s Honour List**, University of Toronto

[Toronto, ON, Canada](#)

2014-16 **Dean’s Honour List (x3)**, University of Toronto

[Toronto, ON, Canada](#)

2013 **Governor General’s Bronze Medal for Academic Excellence**, High School Graduation

[Burlington, ON, Canada](#)

2013 **Regional Champion**, ECOO Programming Competition

[Halton, ON, Canada](#)

2010-13 **School Champion (x4)**, Waterloo CEMC Math Contest

[Burlington, ON, Canada](#)

Research Interests & Skills

Artificial Intelligence

Topic Modelling, Deep Learning for Robust Vision, Active Learning, Unsupervised Learning, AI Ethics

Robotics

Autonomous Scientific Exploration, Human-Robot Interaction, Informative Path Planning

Programming

C++14, Python, ROS, OpenCV, Java, MATLAB, Pandas, Android

Personal Interests

Corpus Christi Jazz Horns and Concert Band

SAXOPHONIST

- Performed in the Atlantic Music Festival (2013), Toronto Music Festival (2012)

Burlington, ON, Canada

Sept. 2009 - June 2013