

# Stewart C. Jamieson

PHD STUDENT · AUTONOMOUS ROBOTS & MACHINE LEARNING

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*A roboticist working to invent autonomous systems that 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 Institution

Cambridge, MA, USA

PH.D. IN APPLIED OCEAN SCIENCE AND ENGINEERING — MARINE ROBOTICS

June 2020 - Present

- Co-supervised by Dr. Yogesh Girdhar (WHOI) and Prof. Jonathan P. How (MIT)
- Focus on developing multi-robot systems that robustly achieve mission objectives in remote and unfamiliar environments

S.M. IN AERONAUTICS AND ASTRONAUTICS — AUTONOMOUS SYSTEMS (5.0/5.0 CGPA)

June 2018 - May 2020

- Thesis: *Enabling Human-Robot Cooperation in Scientific Exploration of Bandwidth-Limited Environments*
- Co-supervised by Dr. Yogesh Girdhar (WHOI) and Prof. Jonathan P. How (MIT)
- Relevant Coursework: Cognitive Robotics, Visual Navigation for Autonomous Vehicles, Bayesian Modelling and Inference

### University of Toronto

Toronto, ON, Canada

B.A.Sc. IN ENGINEERING SCIENCE WITH HONOURS — ROBOTICS MAJOR (3.83/4.0 CGPA)

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)

### aUToronto Self-Driving Car Team

University of Toronto

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 as lead, aUToronto won 1st place in Year One of the SAE/GM AutoDrive Challenge

### Zebra Technologies Inc.

Mississauga, ON, Canada

SOFTWARE ENGINEERING INTERN, ENGINEERING PRODUCT INNOVATION TEAM

May 2016 - Aug. 2017

- Contributed to initial development and testing of the novel Zebra SmartSight™ robot designed for retail operations
- 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

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### 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

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**Jamieson, S.,** How, J.P., Girdhar, Y. (2020). *Active Reward Learning for Co-Robotic Vision Based Exploration in Bandwidth Limited Environments*. In IEEE International Conference on Robotics and Automation (ICRA). Paris, France. **Finalist for Best Paper Award in Service Robotics.**

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

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**Jamieson, S.** (2020). *Enabling Human-Robot Cooperation in Scientific Exploration of Bandwidth-Limited Environments*. Master's Thesis, Massachusetts Institute of Technology & Woods Hole Oceanographic Institution.

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

## Presentations

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Videos and other materials used in some of the following presentations are available at [www.stewartjamieson.com](http://www.stewartjamieson.com)

### Deep Learning Does Not Impede Scientific Insights into Robotics Problems

Montréal, QC, Canada

SOLO 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 IEEE RA-M Paper of the event: <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

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### INTERNATIONAL

2020 **Finalist for Best Paper Award in Service Robotics**, ICRA 2020

Paris, France

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

Yuma, AZ, USA

## DOMESTIC

2018	<b>Dean's Honour List</b> , University of Toronto	<i>Toronto, ON, Canada</i>
2014-16	<b>Dean's Honour List (x3)</b> , University of Toronto	<i>Toronto, ON, Canada</i>
2013	<b>Governor General's Bronze Medal for Academic Excellence</b> , High School Graduation	<i>Burlington, ON, Canada</i>
2013	<b>Regional Champion</b> , ECOO Programming Competition	<i>Halton, ON, Canada</i>
2010-13	<b>School Champion (x4)</b> , Waterloo CEMC Math Contest	<i>Burlington, ON, Canada</i>

## Research Interests & Skills

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<b>Artificial Intelligence</b>	Topic Modelling, Deep Learning for Robust Vision, Active Learning, Unsupervised Learning, AI Ethics
<b>Robotics</b>	Autonomous Scientific Exploration, Human-Robot Interaction, Informative Path Planning
<b>Programming</b>	C++14, Python, ROS, OpenCV, Java, MATLAB, Pandas, Android

## Service Activities

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### Professional Service

*Worldwide*

#### EDITORIAL ROLES

*Nov. 2019 - Present*

- Reviewed Conference Submissions for:
  - International Conference on Machine Learning (ICML)
  - International Conference on Robotics and Automation (ICRA)
  - International Conference on Intelligent Robots and Systems (IROS)
- Reviewed Journal Submissions for:
  - Journal of Aerospace Information Systems (JAIS)

## Personal Interests

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### Corpus Christi Jazz Horns and Concert Band

*Burlington, ON, Canada*

#### SAXOPHONIST

*Sept. 2009 - June 2013*

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