

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)
- Developing multi-robot systems that collaboratively explore remote, unfamiliar environments with limited human guidance

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 multi-robot teams exploring the deep ocean and coral reefs
- 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

Toronto, ON, 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 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

- Co-designed and co-developed the software of the first Zebra SmartSight™ prototype, a robot designed for retail operations
- Helped to research and present business applications for robotics, machine learning, and neural networks
- 16 months of C++14 development experience 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

Peer-Reviewed Publications

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. **Won 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*. In “Debates on the Future of Robotics Research” Workshop at ICRA 2019. Montréal, Canada.

Other Publications

Beaulieu, S., Alexander, H., **Jamieson, S.**, Longworth, B., McLean, C., Soenen, K., York, A., Krinos, A., Cai, L., Govostes, R. and Hernandez, C. (2020). *Building a data science curriculum and community for ocean scientists, engineers, and students using The Carpentries model*. In AGU Fall Meeting 2020.

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

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

Human-Robot Cooperation for Exploring Bandwidth-Limited Environments [Woods Hole, MA, USA](#)
INVITED PRESENTER, AOPE DEPARTMENT SEMINAR SERIES July 2020

Deep Learning Does Not Impede Scientific Insights into Robotics Problems [Montréal, QC, Canada](#)
INVITED LIGHTNING TALK, DEBATES ON THE FUTURE OF ROBOTICS RESEARCH, ICRA 2019 May 2019

- Argued deep learning is a tool, not an obstacle, for making scientific insights into robotics problems. See IEEE RA-M Paper.

16.412 Lecture: Multi-Robot Adaptive Sampling [Cambridge, MA, USA](#)
CO-LECTURER, MASSACHUSETTS INSTITUTE OF TECHNOLOGY Apr. 2019

An Introduction to Neural Networks and Machine Learning [Mississauga, ON, Canada](#)
LEAD PRESENTER FOR ZEBRA TECHNOLOGIES INC. “LUNCH & LEARN” Jan. 2017

- Introduced the key concepts of neural networks & machine learning to over 200 engineers and shared results of 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

- Argued that sufficiently “intelligent” robots of the future 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 and presented results to attending professors, paramedics, and CBC Radio

Honors & Awards

INTERNATIONAL

2020 **Best Paper Award in Service Robotics (out of 1483 Accepted Papers)**, ICRA 2020 [Paris, France](#)
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](#)

Professional Activities

MIT-WHOI Joint Program

Woods Hole, MA, USA

ELECTED AT-LARGE REPRESENTATIVE

Oct. 2020 - Present

- Co-hosted monthly online student events to maintain social cohesion during worldwide pandemic
- Developed and published the MIT-WHOI Joint Program online photoboard

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

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++17, Python, ROS, OpenCV, Java, MATLAB, Pandas, Android

Teaching

The Carpentries

Worldwide

CERTIFIED SOFTWARE CARPENTRIES INSTRUCTOR

Oct. 2020 - Present

- Oct. 2020: Helper for WHOI Data Carpentry Workshop
- July 2020: Co-Instructor for WHOI Python Workshop Series
- Oct. 2019: Helper for WHOI Software Carpentry Workshop

Service Activities

Professional Service

Worldwide

EDITORIAL ROLES

Nov. 2019 - Present

- Reviewed Journal Submissions for:
 - Robotics and Automation Letters (RA-L)
 - Journal of Aerospace Information Systems (JAIS)
- 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)

Personal Interests

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)