Ryan Szeto

Graduate Student Research Assistant

Research Areas

Computer vision, deep learning, vision and language, machine learning

Programming

PyTorch

TensorFlow

OpenCV

Caffe

Python

Bash

MATLAB

JavaScript

Java

Address

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Education

University of Michigan Ann Arbor, MI
Ph.D. in Computer Science and Engineering Sep 2015 – May 2020 (expected)

M.S. in Computer Science and Engineering Sep 2015 – Aug 2017

University of Massachusetts Amherst, MA
B.S. in Computer Science Sep 2011 – May 2015
B.S. in Mathematics Sep 2011 – May 2015

Publications

Ryan Szeto, Simon Stent, German Ros, and Jason J. Corso. "A Dataset To Evaluate The Representations Learned By Video Prediction Models." *International Conference on Learning Representations (Workshop Track)*, 2018.

Ryan Szeto and Jason J. Corso. "Click Here: Human-Localized Keypoints as Guidance for Viewpoint Estimation." *IEEE International Conference on Computer Vision*, 2017.

Paul E. Dickson, Chris Kondrat, **Ryan B. Szeto**, W. Richards Adrion, Tung T. Pham, and Tim D. Richards. "Portable Lecture Capture That Captures the Complete Lecture." *IEEE International Symposium on Multimedia*, 2015.

Ellysha Raelen Recto, Brendan Murphy, **Ryan Szeto**, and Tung Pham. "PAOL and Lecture-Viewer." *ASEE Zone 1 Conference*, 2014.

Awards and Distinctions

NSF Graduate Research Fellowship — Honorable Mention 2017
National Science Foundation

Outstanding Achievement in Artificial Intelligence Award 2015
UMass School of Computer Science

Honors Dean's Award for Outstanding Honors Thesis 2015
UMass Commonwealth Honors College

Honors Research Grant — $1000 2014
UMass Commonwealth Honors College

Phi Beta Kappa 2014
Phi Beta Kappa

Research Assistant Fellowship — $500 2013
UMass Commonwealth Honors College

Cisco Award for Outstanding Achievement   2012
UMass School of Computer Science

Research and Industrial Experience

Graduate Student Research Assistant   Ann Arbor, MI
Vision and Robotics Lab, University of Michigan   Sep 2015 – present
Advisor: Jason J. Corso

- *Video Frame Inpainting.* We propose the first deep learning solution to video frame inpainting, which is composed of a bidirectional prediction module and a temporally-aware frame interpolation module. Our approach produces more accurate and qualitatively satisfying results than a state-of-the-art video prediction method and several strong frame inpainting baselines.

- *Viewpoint Estimation with Human Guidance.* Our Click-Here CNN estimates the location of the camera relative to an object by using a 2D image and the location of a semantic keypoint on the image, provided by a human, as guidance. Our evaluation demonstrated that keypoint information can help models obtain better viewpoint estimates than those that only use information from the image.

Research Intern   Cambridge, MA
Toyota Research Institute   Jun 2017 – Sep 2017
Mentor: Dr. Simon Stent

- *Evaluating the Generality of Video Prediction Models.* We investigated the robustness of existing video prediction models to unseen objects and rates of motion. Our experiments revealed that during prediction, certain models reconstruct objects seen during training at inference time, and all that tested models fail to generalize to faster rates of motion.

Software Engineering Intern   Littleton, MA
IBM   May 2015 – Aug 2015

- *IBM Guardium.* Designed and implemented an interface to manage permissions through an access manager, and reduced page load times by 80% by consolidating remote database queries.

Undergraduate Research Assistant   Amherst, MA
RIPPLES Lab, University of Massachusetts   Jan 2013 – May 2015
Advisors: Prof. Rick Adrion, Prof. Paul Dickson

- *Presentations Automatically Organized from Lectures.* Implemented a portable lecture capture system that processes video feeds of the lecturer, the whiteboard, and the computer screen in real-time.

- *Honors Thesis: Whiteboard Marker Detection.* Proposed a real-time whiteboard marker segmentation algorithm that generates marker stroke candidates by connecting components from a Difference-of-Gaussians edge detector, then filtering them with a sparse stroke detector.

Software Engineering Intern   Natick, MA
The MathWorks, Inc.   May 2014 – August 2014

- *MATLAB Online.* Improved the Variable Editor by writing QUnit tests and implementing cut/copy/paste functionality.

Undergraduate Research Assistant   Amherst, MA
Center for e-Design, University of Massachusetts   Jan 2012 – Dec 2012
Advisors: Prof. Jack Wileden, Prof. Sundar Krishnamurthy

- *Computer-Aided Design (CAD) Data Exchange.* Developed a system that translated CAD part files between PTC Creo and SolidWorks while preserving dimensions and constraints by following a translation protocol inspired by programming language theory.

Teaching Experience

Grader for CMPSCI 670: Graduate Computer Vision   Sep 2014 – Dec 2014
UMass School of Computer Science

Grader for CMPSCI 220: Programming Methodology   Jan 2012 – Dec 2012
UMass School of Computer Science

Academic Service

Student reviewer for International Conference on Machine Learning (ICML)   2018

Student reviewer for IEEE Conference on Computer Vision and Pattern Recognition (CVPR)   2018

Student reviewer for Robotics and Autonomous Systems (RAS)   2017

Student reviewer for IEEE International Conference on Robotics and Automation (ICRA)   2016

Mentorship Experience

Vision and Robotics Lab, University of Michigan   Jun 2016 – Aug 2016

- *Vehicle Crash Analysis.* Mentored three U-M undergraduate students by helping them conduct summer-long projects related to object tracking, annotation collection, and physical simulations, as well as prepare written progress reports and oral presentations to their project sponsors.