

# RYAN SZETO

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## CONTACT INFORMATION

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University of Michigan  
Electrical Engineering and Computer Science  
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## RESEARCH FOCUS

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Visual systems guided by language and human guidance; multimodal embeddings across vision and text

## EDUCATION

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### University of Michigan

Ann Arbor, MI

- Ph.D. in Computer Science and Engineering
- M.S. in Computer Science and Engineering

September 2015 – May 2020 (expected)  
September 2015 – August 2017

### University of Massachusetts

Amherst, MA

- B.S. in Computer Science
- B.S. in Mathematics

September 2011 – May 2015  
September 2011 – May 2015

## PUBLICATIONS

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- **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

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NSF Graduate Research Fellowship – Honorable Mention	Spring 2017
UMass CS Outstanding Achievement in Artificial Intelligence Award	Spring 2015
Honors Dean’s Award for Outstanding Honors Thesis	Spring 2015
Honors Research Grant from Commonwealth Honors College (\$1000)	Fall 2014
Phi Beta Kappa	Spring 2014
Research Assistant Fellowship from Commonwealth Honors College (\$1000)	Fall 2013
Cisco Award for Outstanding Achievement	Fall 2012

## RESEARCH AND INDUSTRIAL EXPERIENCE

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### Vision and Robotics Lab, University of Michigan

Ann Arbor, MI

Graduate Student Research Assistant

September 2015 – present

Mentor: Prof. 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 provides 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.

## **Toyota Research Institute**

*Research Intern*

Cambridge, MA  
June 2017 – September 2017

*Mentors: Dr. Simon Stent, Dr. German Ros*

- *Evaluating the Generality of Video Prediction Models.* 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 from training at inference time, and all that tested models fail to generalize to faster rates of motion.

## **IBM**

*Software Engineering Intern*

Littleton, MA  
May 2015 – August 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.

## **RIPPLES, University of Massachusetts**

*Undergraduate Research Assistant*

Amherst, MA  
January 2013 – May 2015

*Mentors: 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.

## **The MathWorks, Inc.**

*Software Engineering Intern*

Natick, MA  
May 2014 – August 2014

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

## **Center for e-Design, University of Massachusetts**

*Software Engineering Intern*

Amherst, MA  
January 2012 – December 2012

*Mentors: 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 (UMass)	September 2014 – December 2014
Grader for CMPSCI 220: Programming Methodology (UMass)	January 2012 – December 2012

## **ACADEMIC SERVICE**

Reviewer for International Conference on Machine Learning (ICML)	March 2018
Reviewer for IEEE Conference on Computer Vision and Pattern Recognition (CVPR)	January 2018
Reviewer for Robotics and Autonomous Systems	November 2017
Reviewer for IEEE International Conference on Robotics and Automation (ICRA)	November 2016

## MENTORSHIP EXPERIENCE

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### **Vision and Robotics Lab, University of Michigan**

- *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.

## PROGRAMMING SKILLS

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**Languages:** Python, MATLAB, JavaScript, Bash, Java, C, C++

**Software:** PyTorch, TensorFlow, Caffe, OpenCV, Dojo, React.js, Node.js, Android

**Operating systems:** Windows, Ubuntu