

CALDEN WLOKA

647 · 448 · 5109 ◊ [calden \(dot\) wloka \(at\) gmail \(dot\) com](mailto:calden (dot) wloka (at) gmail (dot) com)

www.cse.yorku.ca/~calden ◊ [Google Scholar Profile](#)

EDUCATION

- PhD in Computer Science** 2019
Tsotsos Lab for Active and Attentive Vision
York University
- Masters of Computer Science** 2012
Tsotsos Lab for Active and Attentive Vision
York University
- Honours Bachelor of Science** 2009
Specialist in Computational Neuroscience, Minor in Mathematics
University of Toronto

WORK EXPERIENCE

- York University** August 2019-Present
Post-Doctoral Visitor *Toronto, ON*
- Researcher in the Tsotsos Lab for Active and Attentive Vision. Primary research areas: visual working memory, fixation control, saliency, and cognitive programs
 - Mentored graduate and undergraduate students in their research
- Focal Systems** September 2017-January 2018
Deep Learning Research Consultant *Toronto, ON*
- Provided computer vision and experimental design expertise for research into robust deep learning based machine vision applications in unconstrained environments
- Delph[eye]** March 2015-April 2017
Co-Founder and CTO *Toronto, ON*
- Developed applications for applying saliency research to improve visual designs.
- Crosswing, Inc.** May 2013-August 2013
Senior Vision Systems Designer *Markham, ON*
- Industry-academia partnership through the NSERC Field Robotics Network
 - Designed updates for an omni-direction camera and vision system for a telepresence robot
 - Built a Kinect-based robot detection system for monitoring robot location in a room
- Automation Tooling Systems** May 2006-May 2007
Systems Design Intern *Cambridge, ON*
- Developed and tested machine vision systems for automated manufacturing equipment, from prototyping through to on-site trouble-shooting and modification
 - Worked on projects involving a variety of products, including automated inspection of medical stents, consumer goods packaging, and quality control for electronic components

PEER-REVIEWED PUBLICATIONS

- Saeed Ghorbani, Calden Wloka, Ali Etemad, Marcus A. Brubaker, and Nikolaus F. Troje (2020) Probabilistic Character Motion Synthesis using a Hierarchical Deep Latent Variable Model. *Proc. Symposium on Computer Animation (SCA)*
- John K. Tsotsos, Iuliia Kotseruba, and Calden Wloka (2019) Rapid visual categorization is not guided by early salience-based selection. *PLOS ONE* 14(10):1-23
- Iuliia Kotseruba, Calden Wloka, and John K. Tsotsos (2019) Do Saliency Models Detect Odd-One-Out Targets? New Datasets and Evaluations. *Proc. of British Machine Vision Conference (BMVC)*
- Calden Wloka, Iuliia Kotseruba, and John K. Tsotsos (2018) Active Fixation Control to Predict Saccade Sequences. *Proc. Conference on Computer Vision and Pattern Recognition (CVPR)*
- Calden Wloka and John K. Tsotsos (2016) Spatially Binned ROC: A Comprehensive Saliency Metric. *Proc. Conference on Computer Vision and Pattern Recognition (CVPR)*
- John K. Tsotsos, Iuliia Kotseruba, and Calden Wloka (2016) A Focus on Selection for Fixation. *Journal of Eye Movement Research* 9(5):2, 1-34
- Neil D.B. Bruce, Calden Wloka, Nick Frosst, Shafin Rahman, and John K. Tsotsos (2015) On Computational Modeling of Visual Saliency: Examining What’s Right and What’s Left. *Vision Research*, 116:95-112

PREPRINTS AND TECHNICAL REPORTS

- Calden Wloka and John K. Tsotsos (2020) An Empirical Method to Quantify the Peripheral Performance Degredation in Deep Networks *arXiv preprint*
- Calden Wloka, Toni Kunić, Iuliia Kotseruba, Ramin Fahimi, Nicholas Frosst, Neil D.B. Bruce, and John K. Tsotsos (2018) SMILER: Saliency Model Implementation Library for Experimental Research. *arXiv preprint*

INVITED TALKS

- Calden Wloka. “Some Salient Issues with Saliency Models.” A.I. Socratic Circles (AISC), Toronto, ON, Canada, October 2020
- Calden Wloka. “Putting Computational Saliency in Context.” Facebook Reality Labs, Redmond WA, USA, January 2020
- Calden Wloka. “An Overview of Computational Saliency.” Centre for Neuroscience Studies Seminar Series (aka “The Friday Fights”) Queen’s University, Kingston ON, Canada, September 2014

THESES AND DISSERTATIONS

- Calden Wloka **An Evaluation of Saliency and Its Limits.** PhD Dissertation, Department of Electrical Engineering and Computer Science, York University, 2019
- Calden Wloka **Integrating Overt and Covert Attention Using Peripheral and Central Processing Streams.** Master’s Thesis, Department of Computer Science and Engineering, York University, 2012

RECENT CONFERENCE ABSTRACTS

- Calden Wloka, Toni Kunic, Iuliia Kotseruba, and John K. Tsotsos (2019) SMILER: An Easy and Consistent Way to Compute Saliency Maps, *International Conference on Predictive Vision (ICPV)*
- Calden Wloka and John K. Tsotsos (2019) Flipped on its Head: deep learning-based saliency finds asymmetry in the opposite direction expected for singleton search of flipped and canonical targets, *Vision Sciences Society (VSS)*

- Toni Kunic, Calden Wloka, and John K. Tsotsos (2019) SMILER: Consistent and Usable Saliency Model Implementations, *Computational and Mathematical Models in Vision (MODVIS)*
- Jessica D'eon, Sarah C. Kavassalis, Calden Wloka, and John K. Tsotsos (2018) Insights from Computer Vision to Improve Student Data Visualization, *Canadian Chemistry Conference and Exhibition*
- Calden Wloka, Sang-Ah Yoo, Rakesh Sengupta, and John Tsotsos (2017) The Interaction of Target-Distractor Similarity and Visual Search Efficiency for Basic Features, *Vision Sciences Society (VSS)*

PATENTS

- Co-inventor of *Systems and Methods for the Inspection of Stents* - US8134700, Issued 13 March, 2012
- Co-inventor of *Systems and Methods for the Inspection of Cylinders* - US7812941, Issued 12 October, 2010

AWARDS AND HONOURS

- | | |
|---|-----------|
| John Barron Doctoral Dissertation Award
Canadian Image Processing and Pattern Recognition Society (CIPPRS) | 2019 |
| Best Computer Vision Poster
International Conference on Predictive Vision | 2019 |
| Post-Graduate Scholarship
National Science and Engineering Research Council (NSERC) | 2013-2016 |
| York University Thesis Award | 2012 |
| Joseph Liu Best Thesis Award
Department of Computer Science and Engineering, York University | 2012 |
| Ontario Graduate Scholarship (OGS) | 2011-2012 |
| Ludwig Prandtl Fellowship
Max Planck Institut für Dynamik und Selbstorganisation | 2009 |

TEACHING EXPERIENCE

- | | |
|--|-------------------------------------|
| Course Director | <i>York University, Toronto, ON</i> |
| · EECS4422/5323 Computer Vision, Fall 2019 | |
| Teaching Assistant | <i>York University, Toronto, ON</i> |
| · Earned the Teaching Assistant Certificate in Teaching (TACT) | Winter 2015 |
| · MATH1090 Introduction to Logic for Computer Science | Fall 2019 |
| · EECS4101 Advanced Data Structures | Winter 2017 |
| · EECS4115 Computational Complexity | Winter 2017 |
| · EECS3000 Professional Practice in Computing | Fall 2011-2013, 2015-2016 |
| · EECS4421 Robotics, | Winter 2014 2016 |
| · MATH/EECS1028 Discrete Math for Engineers | Winter 2015-2016 |
| · EECS2001 Introduction to the Theory of Computation | Fall 2014-2015 |
| · EECS3101 Design and Analysis of Algorithms | Winter 2012, Fall 2014 |
| · EECS3311 Software Design | Summer 2014 |
| · CSE1030 Introduction to Computer Science II | Winter 2012-2013 |
| Guest Lecturer | |
| · University of Toronto, ENV233 Earth System Chemistry | Winter 2018 |

SERVICE

University Service

York University, Toronto, ON

- Faculty of Graduate Studies Council, Representative for Electrical Engineering and Computer Science
2016-2017
- Tenure and Promotion Committee Member, Department of Electrical Engineering and Computer
Science 2014-2016

Peer Reviewer

- Conference on Computer Vision and Pattern Recognition (CVPR) 2021
- European Conference on Computer Vision (ECCV) 2020
- Cognitive Science Society Annual Conference (CogSci) 2020
- AAAI Conference on Artificial Intelligence 2020
- IEEE and PAMI-TC Workshop on Applications in Computer Vision (WACV) 2018-2020
- International Conference on Computer Vision (ICCV) 2017, 2019
- British Machine Vision Conference (BMVC) 2019
- IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI) 2018
- IEEE Transactions on Image Processing 2018, 2020
- IET Computer Vision 2017
- Image and Vision Computing 2016
- Conference on Computer and Robot Vision (CRV) 2016
- Computer Vision and Image Understanding 2013, 2014
- The Visual Computer 2014
- Journal of Vision 2014, 2017-2018

TECHNICAL SKILLS

Computer Languages	Python, MATLAB, C++, C, JavaScript
Operating Systems	Windows, Gnu-Linux
Tools	Git, SVN, OpenCV, PyTorch
Documentation and Presentation	L ^A T _E X, Markdown, HTML

SCIENCE POPULARIZATION AND OUTREACH

- Skype a Scientist volunteer speaker
Sequim School District November, 2020
- Narrative Perception: A Study in Interspecies Stimuli
Nonfiction essay published in *Clarkesworld Magazine*, Issue 127 April 2017
- Presenter for York University Cognitive Science Students' Association
Talk title: *Modeling the Control of Eye Movements* March 2017
- NeuroTechTO Debate Panelist
Debate title: *Creating Intelligence* June 2016
- Three Minute Thesis (3MT) Competition
Finalist at York University March 2016