

# DIRK BERNHARDT-WALTHER

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## POSITIONS

- 2019 – present Associate Professor, Department of Psychology, University of Toronto (St. George)
- 2014 – present Associate Scientist (cross-appointment), Rotman Institute, Toronto, Canada
- 2014 – 2019 Assistant Professor, Department of Psychology, University of Toronto (St. George)
- 2012 – 2014 Associate Director, Center for Cognitive and Brain Sciences, The Ohio State University
- 2010 – 2014 Assistant Professor, Department of Psychology, The Ohio State University
- 2009 – 2010 Postdoctoral Research Associate, Beckman Institute, University of Illinois at Urbana-Champaign
- 2006 – 2009 Beckman Postdoctoral Fellow, Beckman Institute, University of Illinois at Urbana-Champaign
- 2006 Postdoctoral Fellow, Centre for Vision Research, York University, Toronto, ON
- 1999 – 2000 Research Consultant, Lucent Technologies Bell Laboratories, Murray Hill, NJ

## EDUCATION

- 2006 Ph.D., Computation and Neural Systems, California Institute of Technology  
Advisors: Dr. Christof Koch, Dr. Pietro Perona
- 1999 M.Phil, Physics, Trinity College, University of Cambridge, Cambridge, UK  
Advisor: Dr. Howard P. Hughes.
- 1995 – 1998 Undergraduate studies in Physics and Computer Science, Universität Leipzig, Leipzig, Germany, Vordiplom in Physics (1997) and in Computer Science (1998)

## ACADEMIC HONORS AND FELLOWSHIPS

- 2019 Appointed Senior Member of the Institute of Electrical and Electronics Engineers
- 2017 SONY Faculty Research Award
- 2015 Connaught New Researcher Award, Connaught Fund, University of Toronto
- 2012 Fred Brown Research Award for best research paper: Department of Psychology, The Ohio State University
- 2006 – 2009 Beckman Postdoctoral Fellowship, University of Illinois at Urbana-Champaign
- 2007 Conference Travel Award for Computational and Systems Neuroscience (Cosyne)
- 2007 Conference Travel Award for Grand Challenges in Neural Computation
- 2005 – 2006 Pre-doctoral Fellowship, Sloan-Swartz Center for Theoretical Neuroscience, California Institute of Technology

- 2005 Best Poster Presentation Award at the Joint Symposium on Neural Computation, University of California Los Angeles
- 2004 Best Poster Presentation Award at the International Conference on Computer Vision and Pattern Recognition, Washington, D.C.
- 2000 – 2001 Milton E. Mohr Graduate Fellowship, California Institute of Technology
- 1996 – 2001 Fellow of the Studienstiftung des deutschen Volkes (German National Scholarship Foundation)

## GRANTS

- 2019 – 2021 PI (with Michael Gruninger), XSeed Grant  
Faculty of Arts and Science, Faculty of Engineering, University of Toronto  
Title: From Pixels to Propositions: Using Knowledge-based Grouping to Bridge the Meaning Gap in Visual Perception  
Research Support: CAD 120,000
- 2017 – 2019 PI, Insight Development Grant (430-2017-01189),  
Social Sciences and Humanities Research Council of Canada (SSHRC)  
The role of symmetry in the aesthetic pleasure of viewing real-world scenes  
Research support: CAD 74,733
- 2017 – 2018 PI, Sony Faculty Research Award, Sony Electronics Inc.  
*Symmetry: A Guiding Principle in Visual Processing*  
Research support: CAD 62,260
- 2015 – 2020 PI, Discovery Grant (RGPIN-2015-06696),  
Natural Sciences and Engineering Research Council of Canada (NSERC)  
*Neural mechanisms of perceiving dynamic real-world environments*  
Research support: CAD 120,000
- 2015 – 2017 PI, Connaught New Researcher Award, Connaught Fund, University of Toronto  
*Disentangling influences on the perception of real-world scenes in time and space*  
Research support: CAD 9,944.72
- 2015 – 2018 PI, John R. Evans Leaders Fund (Project Number 32896)  
*Neural mechanisms of natural scene perception*, Research support:  
Canadian Foundation for Innovation: CAD 100,000  
Ontario Research Fund: CAD 100,000  
University of Toronto: CAD 34,383
- 2014 – 2019 co-PI (PI: Vladimir Sloutsky), National Institute for Child Health and Human Development  
(HD078545-A1, R01), *The Development of Categorization*  
Research support: USD 1,925,000.00
- 2011 – 2013 PI, Seed Grant, Center for Cognitive Science, The Ohio State University  
*Eye movements as an objective measure of categorization performance*  
Research support: USD 26,838
- 2008 – 2013 co-PI (PI: Fei-Fei Li), National Eye Institute (NIH 1 R01 EY019429),  
*CRCNS: fMRI Pattern Analysis of Neural Correlates of Natural Scenes Categories*  
Research support: USD 1,302,157
- 2008 – 2010 co-PI (PI: Mark Hasegawa-Johnson), National Science Foundation  
(NSF 0803219, RI-medium),

*Audio Diarization - Towards Comprehensive Description of Audio Events*  
Research support: USD 249,864

2002 – 2003 PI, Seed Grant, Institute for Neuromorphic Engineering  
*Detection of visual events in underwater video using a neuromorphic saliency-based attention system*, Research support: USD 5,000

## TEACHING EXPERIENCE

Undergraduate: Sensation and Perception; Vision Science; Natural Scene Perception (seminar)  
Graduate: Natural Scene Perception; Pattern Recognition in Neuroimaging, Functional MRI of the Human Visual System

## PUBLICATIONS

Google Scholar Profile: <https://scholar.google.ca/citations?user=rnps4mqAAAAJ&hl=en>

Morteza Rezanejad, Gabriel Downs, John Wilder, **Dirk B. Walther**, Allan Jepson, Sven Dickinson, and Kaleem Siddiqi (2019) Scene Categorization from Contours: Medial Axis Based Saliency Measures. *IEEE International Conference on Computer Vision and Pattern Recognition*.

Claudia Damiano, and **Dirk B. Walther** (2019). Distinct roles of eye movements during memory encoding and retrieval. *Cognition*, 184: 119-129.  
doi: <https://doi.org/10.1016/j.cognition.2018.12.014>.

Claudia Damiano, John Wilder, and **Dirk B. Walther** (2019). Mid-level feature contributions to category-specific gaze guidance. *Attention, Perception, & Psychophysics*, 81: 35-46.  
<https://doi.org/10.3758/s13414-018-1594-8>.

John Wilder, Morteza Rezanejad, Sven Dickinson, Kaleem Siddiqi, Allan Jepson, **Dirk B. Walther** (2019). Local contour symmetry facilitates scene categorization. *Cognition*, 182: 307-317.  
<https://doi.org/10.1016/j.cognition.2018.09.014>.

John Wilder, Sven Dickinson, Allan Jepson, and **Dirk B. Walther** (2018). Spatial relationships between contours impact rapid scene classification. *Journal of Vision*. 18(8):1. doi: 10.1167/18.8.1.

Matthew X. Lowe, Jason Rajsic, Susanne Ferber, and **Dirk B. Walther** (2018). Discriminating scene categories from brain activity within 100 ms. *Cortex* 106. doi:10.1016/j.cortex.2018.06.006

Thomas P. O'Connell, Per B. Sederberg, and **Dirk B. Walther** (2018). Representational differences between line drawings and photographs of natural scenes: A dissociation between multi-voxel pattern analysis and repetition suppression. *Neuropsychologia*, 117: 513–519.  
doi:10.1016/j.neuropsychologia.2018.06.013

Yaelan Jung, Bart Larson, and **Dirk B. Walther** (2018). Modality-independent coding of scene categories in prefrontal cortex. *Journal of Neuroscience*. 38(26), 5969–5981. doi:10.1101/142562

Yaelan Jung and **Dirk B. Walther** (2018) Using decoding error patterns to trace the neural signature of auditory scene perception, *Proceedings of the 8th International Workshop on Pattern Recognition in Neuroimaging*, Singapore

Daniel Berman, Julie D. Golomb, and **Dirk B. Walther** (2017) Scene content is predominantly conveyed by high spatial frequencies in scene-selective visual cortex. *PLOS ONE* 12(12): e0189828.

Heeyoung Choo and **Dirk B. Walther** (2017). Modeling the Effect of Stimulus Perturbations on Error Correlations between Brain and Behavior, *Proceedings of the 7th International Workshop on Pattern Recognition in Neuroimaging*, Toronto, Canada

Heeyoung Choo, Jack Nasar, Bardia Nikrahei, and **Dirk B. Walther** (2017). Neural codes of seeing architectural styles, *Scientific Reports* 7, Article number: 40201, doi:10.1038/srep40201.

Heeyoung Choo and **Dirk B. Walther** (2016) Contour junctions underlie neural representations of scene categories in human visual cortex, *Neuroimage*, 135, 32-44.  
doi:10.1016/j.neuroimage.2016.04.021

Claudia Damiano and **Dirk B. Walther** (2015) Content, not context, facilitates memory for real-world scenes. *Visual Cognition*, 23(7), 852-855. doi: 10.1080/13506285.2015.1093241

Emanuele Olivetti and **Dirk B. Walther** (2015) A Bayesian Test for Comparing Classifier Errors, *Proceedings of the 5th International Workshop on Pattern Recognition in Neuroimaging*: 69-72, Stanford, CA.

Thomas O'Connell and **Dirk B. Walther** (2015) Dissociation of salience-driven and content-driven spatial attention to scene category with predictive decoding of gaze patterns, *Journal of Vision*, 12(5):20, 1-13, doi:10.1167/15.5.20.

Michael R. Richards, Stephen Rosenstiel, Henry W. Fields, Jr, F. Michael Beck, Allen R. Firestone, **Dirk B. Walther**, and James M. Sackstederg (2015) Contribution of malocclusion and female facial attractiveness to smile esthetics evaluated by eye tracking, *American Journal of Orthodontics and Dentofacial Orthopedics*, 147(4):472-82.

**Dirk B. Walther** and Dandan Shen (2014) Nonaccidental Properties Underlie Human Categorization of Complex Natural Scenes, *Psychological Science*, 25(4): 851-860, doi: 10.1177/0956797613512662

Kyungtae Kim, Kai-Hsiang Lin, **Dirk B. Walther**, Mark A. Hasegawa-Johnson, Thomas S. Huang (2014) Automatic Detection of Auditory Saliency with Optimized Linear Filters Derived from Human Annotation, *Pattern Recognition Letters*, 38: 78-85. dx.doi.org/10.1016/j.patrec.2013.11.010

**Dirk B. Walther** (2013) Using confusion matrices to estimate mutual information between two categorical measurements, *Proceedings of the 3rd International Workshop on Pattern Recognition in Neuroimaging*: 220-224. Philadelphia, PA.

Ana Torralbo, **Dirk B. Walther**, Barry Chai, Eamon Caddigan, Li Fei-Fei, Diane M. Beck (2013) Good Exemplars of Natural Scene Categories Elicit Clearer Patterns than Bad Exemplars but Not Greater BOLD Activity. *PLoS ONE* 8(3): e58594. doi:10.1371/journal.pone.0058594  
10.1371/journal.pone.0058594

Samuel Rivera, Catherine Best, Hyungwook Yim, Aleix Martinez, Vladimir Sloutsky, **Dirk B. Walther** (2012). Automatic selection of eye tracking variables in visual categorization for adults and infants. In N. Miyake, D. Peebles, & R. P. Cooper (Eds.), *Proceedings of the 34th Annual Conference of the Cognitive Science Society*: 2240-2245. Austin, TX: Cognitive Science Society.

**Dirk B. Walther**, Barry Chai, Eamon Caddigan, Diane M. Beck, and Li Fei-Fei (2011), Simple line drawings suffice for functional MRI decoding of natural scene categories, *Proceedings of the National Academy of Sciences of the USA* 108 (23): 9661-9666.

Loan T.K. Vo, **Dirk B. Walther**, Arthur F. Kramer, Kirk I. Erickson, Walter R. Boot, Michelle W. Voss, Ruchika S. Prakash, Monica Fabiani, Gabriele Gratton, Daniel J. Simons, and Michelle Y. Wang (2011), Predicting Individuals' Learning Success from Patterns of Pre-learning MRI Activity. *PLoS One* 6(1): e16093. doi: 10.1371/journal.pone.0016093

**Dirk B. Walther**, Eamon Caddigan, Li Fei-Fei, and Diane M. Beck (2009), Natural scene categories revealed in distributed patterns of activity in the human brain, *Journal of Neuroscience*, 29(34):10573–10581.

Bangpeng Yao, **Dirk B. Walther**, Diane M. Beck, and Li Fei-Fei (2009) Hierarchical Mixture of Classification Experts Uncovers Interactions between Brain Regions, *Neural Information Processing Systems*: 2178-2186.

Barry Chai\*, **Dirk B. Walther\***, Diane M. Beck, and Li Fei-Fei (2009) Exploring Functional Connectivity of the Human Brain using Multivariate Information Analysis, *Neural Information Processing Systems*, 270-278. (\* indicates equal contribution)

Huazhong Ning, Tony X. Han, **Dirk B. Walther**, Ming Liu, and Thomas Huang (2009), Hierarchical Space-Time Model Enabling Efficient Search for Human Actions, *IEEE Transactions on Circuits and Systems for Video Technology*, 19(6): 808-820.

**Dirk B. Walther** and Li Fei-Fei (2007) Task-set switching with natural scenes: Measuring the cost of deploying top-down attention. *Journal of Vision*, 7(11):9, 1-12.

**Dirk Walther** and Christof Koch (2006) Modeling attention to salient proto-objects, *Neural Networks*, 19(9): p. 1395-1407.

**Dirk Walther\***, Ueli Rutishauser\*, Christof Koch, and Pietro Perona (2005) Selective visual attention enables learning and recognition of multiple objects in cluttered scenes, *Computer Vision and Image Understanding*, 100: 41-63. (\* indicates equal contribution)

**Dirk Walther**, Duane R. Edgington, and Christof Koch (2004) Detection and Tracking of Objects in Underwater Video. *IEEE International Conference on Computer Vision and Pattern Recognition*, 1: 544-549.

Ueli Rutishauser\*, **Dirk Walther\***, Christof Koch, and Pietro Perona (2004) Is bottom-up attention useful for object recognition? *IEEE International Conference on Computer Vision and Pattern Recognition*, 2: 37-44. (\* indicates equal contribution)

**Dirk Walther**, Ueli Rutishauser, Christof Koch, and Pietro Perona (2004), On the usefulness of attention for object recognition, *2nd Workshop on Attention and Performance in Computational Vision at the European Conference for Computer Vision*, 96-103.

**Dirk Walther**, Laurent Itti, Maximilian Riesenhuber, Tomaso Poggio, and Christof Koch (2002) Attentional Selection for Object Recognition – a Gentle Way. *Biologically Motivated Computer Vision – Lecture Notes in Computer Science*, Springer 2525: 472-479.

D. Chung, R. Hirata, T. N. Mundhenk, J. Ng, R. J. Peters, E. Pichon, A. Tsui, T. Ventrice, **D. Walther**, P. Williams, and L. Itti (2002) A New Robotics Platform for Neuromorphic Vision: Beobots. *Biologically Motivated Computer Vision – Lecture Notes in Computer Science*, Springer 2525: 558-566.

**PUBLICATIONS IN PROGRESS**

Yaelan Jung, **Dirk B. Walther**, and Amy Finn, Automatic categorical abstraction during visual statistical learning in children and adults, under review at *Cognition*.

Ruu Harn Cheng, **Dirk B. Walther**, Soojin Park, and Daniel D. Dilks. Concavity and convexity of conjoint surfaces underlie neural and behavioral categorization of objects and scenes, *in progress*

Ann Heping Sheng and **Dirk B. Walther**. Where to Draw the Line: Effect of Artistic Expertise on Line Drawings of Natural Scenes, *in progress*

Kevin D'Arby, Sophia Cheng, **Dirk B. Walther**, and Vladimir Sloutsky. Visual processing of natural objects and scenes in children and adults, *in progress*

Heeyoung Choo, Emanuele Olivetti, and **Dirk B. Walther**, A Bayesian test for confusion matrices in multiple-choice testing paradigms, *in progress*

John Wilder, Morteza Rezanejad, Sven Dickinson, Kaleem Siddiqi, Allan Jepson, and **Dirk B. Walther**. The role of local symmetry in the neural representations of scene categories, *in progress*.

Charlotte Leferink, Claudia Damiano, and **Dirk B. Walther**. Population receptive field mapping of high-level visual cortex at 7 Tesla, *in progress*

**BOOK CHAPTERS**

**Dirk B. Walther**, Diane M. Beck, and Li Fei-Fei (2012) To err is human: correlating fMRI decoding and behavioral errors to probe the neural representation of natural scene categories. in: Nikolaus Kriegeskorte and Gabriel Kreiman (eds.), *Visual population codes – Toward a common multivariate framework for cell recording and functional imaging*, MIT Press, Cambridge, Massachusetts, pp. 391-415.

**Dirk B. Walther** and Christof Koch (2007) Attention in Hierarchical Models of Object Recognition. in Paul Cisek, Trevor Drew, and John F. Kalaska (eds.), *Computational Neuroscience: Theoretical insights into brain function*, *Progress in Brain Research*, 165: 57-78.

**POPULAR SCIENCE PUBLICATIONS**

Nachiket Kapre, **Dirk Walther**, Christof Koch, and André DeHon (2004) Saliency on a chip – a digital approach on an FPGA. *The Neuromorphic Engineer* 2: 9-11.

**Dirk Walther**, and Duane Edgington (2004) The art of seeing jellies. *The Neuromorphic Engineer* 1: 6-6.

**CONFERENCE PRESENTATIONS (LAST 3 YEARS)**

Lauren Y.L. Cao, Stephanie Yung, Winnie Wang, and **Dirk B. Walther** (2019), The role of sound in guiding gaze in movies, *Lake Ontario Visionary Establishment*, Niagara Falls, Ontario

Yaelan Jung and **Dirk B. Walther** (2018), Decoding of thermal sensations from human brain activity, *Annual Meeting of the Society for Neuroscience*, San Diego, CA

John Wilder, Morteza Rezanejad, Sven Dickinson, Kaleem Siddiqi, Allan Jepson, and **Dirk B. Walther** (2018), The role of local symmetry in the neural representations of scene *Annual Meeting of the Society for Neuroscience*, San Diego, CA

Claudia Damiano, Charlotte Leferink, and **Dirk B. Walther** (2018), Population receptive field mapping of high-level visual cortex at 7 Tesla, *Annual Meeting of the Society for Neuroscience*, San Diego, CA

**Dirk B. Walther**, Daniel Berman, and Julie D. Golomb (2018), Scene content is predominantly conveyed by high spatial frequencies in scene-selective visual cortex, *Annual Meeting of the Vision Sciences Society*, St. Pete Beach, FL (oral)

Yalean Jung, **Dirk B. Walther**, and Amy S. Finn (2018), Automatic categorical abstraction during visual statistical learning in children and adults, *Annual Meeting of the Vision Sciences Society*, St. Pete Beach, FL

John Wilder, Morteza Rezanejad, Sven Dickinson, Kaleem Siddiqi, Allan Jepson, and **Dirk B. Walther** (2018), Measuring local symmetry in real-world scenes, *Annual Meeting of the Vision Sciences Society*, St. Pete Beach, FL

Claudia Damiano, John Wilder, and Dirk B. Walther (2018), Category-specific guidance of gaze in photographs and line drawings, *Annual Meeting of the Vision Sciences Society*, St. Pete Beach, FL

Ruu Harn Cheng, **Dirk B. Walther**, and Soojin Park (2018), Concavity and convexity of conjoint surfaces underlie neural and behavioral categorization of objects and scenes, *Annual Meeting of the Vision Sciences Society*, St. Pete Beach, FL

John Wilder, Morteza Rezanejad, Kaleem Siddiqi, Sven Dickinson, Allan Jepson, **Dirk B. Walther** (2018), Using the 1<sup>st</sup> and 2<sup>nd</sup> derivative of the radius function of medial axes to measure symmetry in real-world scenes, *Workshop on Computational and Mathematical Models in Vision (MODVIS)*, St. Pete Beach, FL. (oral)

Yalean Jung, **Dirk B. Walther**, and Amy S. Finn (2018), Statistical learning of categorical regularities in adults and children, *Annual Meeting of the Cognitive Neuroscience Society*, Boston, MA

Yaelan Jung, Bart Larsen, and **Dirk B. Walther** (2018), Modality-Independent Coding of Concepts in Prefrontal Cortex, *Lake Ontario Visionary Establishment*, Niagara Falls, ON

Claudia Damiano and **Dirk B. Walther** (2018), Distinct roles of eye movements during memory encoding and retrieval, *Lake Ontario Visionary Establishment*, Niagara Falls, ON

Ruu Harn Cheng, **Dirk B. Walther**, and Soojin Park (2017), Neural Sensitivity to Concavity and Convexity of Spatial Boundary Cues, *Annual Meeting of the Society for Neuroscience*, Washington, DC

Yaelan Jung, Bart Larsen, and **Dirk B. Walther** (2017), Modality-Independent Coding of Concepts in Prefrontal Cortex, *Conference on Cognitive Computational Neuroscience*, New York, NY (travel award)

Matthew X. Lowe, Jason Rajsic, Susanne Ferber, and **Dirk B. Walther** (2017), Category discrimination of early electrophysiological responses reveals the time course of natural scene perception, *Annual Meeting of the Vision Sciences Society*, St. Pete Beach, FL. (travel award)

John Wilder, Morteza Rezanejad, Sven Dickinson, Kaleem Siddiqi, Allan Jepson, and **Dirk B. Walther** (2017), The perceptual advantage of symmetry for scene perception, *Annual Meeting of the Vision Sciences Society*, St. Pete Beach, FL. (oral)

Claudia Damiano and **Dirk B. Walther** (2017), Increased scene exploration does not enhance memory, *Annual Meeting of the Vision Sciences Society*, St. Pete Beach, FL.

Yaelan Jung, Bart Larsen, and **Dirk B. Walther** (2017), Discriminating multimodal from amodal representations of scene categories using fMRI decoding, *Annual Meeting of the Vision Sciences Society*, St. Pete Beach, FL.

John D. Wilder, Morteza Rezaeajad, Sven Dickinson, Allan Jepson, Kaleem Siddiqi, and **Dirk B. Walther** (2017), The role of symmetry in scene categorization by human observers, *Workshop on Computational and Mathematical Models in Vision (MODVIS)*, St. Pete Beach, FL. (oral)

Morteza Rezaeajad, John D. Wilder, Sven Dickinson, Allan Jepson, **Dirk B. Walther**, and Kaleem Siddiqi (2017), Scoring Scene Symmetry, *Workshop on Computational and Mathematical Models in Vision (MODVIS)*, St. Pete Beach, FL. (oral)

Kevin Darby, Wei Deng, Vladimir Sloutsky, and **Dirk B. Walther** (2017) What's scene in development? Rapid attention allocation to objects and scenes in children. *Society for Research in Child Development Biennial Meeting*, Austin, TX.

John D. Wilder, Sven Dickinson, Allan Jepson, and **Dirk B. Walther** (2016) Disentangling the Roles of Junctions and Spatial Relations Between Contours for Scene Categorization. *Workshop on Computational and Mathematical Models in Vision (MODVIS)*, St. Pete Beach, FL. (oral)

Yaelan Jung, Bart Larsen and **Dirk B. Walther** (2016) Conceptual representations of scene categories in prefrontal cortex transcend sensory modalities. *Annual Meeting of the Vision Sciences Society*, St. Pete Beach, FL. (oral)

Claudia Damiano and **Dirk B. Walther** (2016) Distinct roles of eye movements during memory encoding and retrieval. *Annual Meeting of the Vision Sciences Society*, St. Pete Beach, FL.

Heeyoung Choo and **Dirk B. Walther** (2016) The role of category-specific global orientation statistics for scene categorization. *Annual Meeting of the Vision Sciences Society*, St. Pete Beach, FL.

Ann Heping Sheng and **Dirk B. Walther** (2016) Where to Draw the Line: Effect of Artistic Expertise on Line Drawings of Natural Scenes. *Annual Meeting of the Vision Sciences Society*, St. Pete Beach, FL.

**Dirk B. Walther** (2016) Contour junctions underlie neural representations of scene categories in human vision. *Annual Interdisciplinary Conference*, Breckenridge, CO. (oral)

## INVITED TALKS

Nov. 2018	Samsung AI Research, Toronto, Ontario, Canada
June 2018	University of Macau, Macau, People's Republic of China
June 2018	Yonsei University, Seoul, Korea
April 2018	Brain and Mind Institute, Western University, London, Ontario, Canada
Oct. 2017	Rotman Research Institute, Baycrest Hospital, Toronto, Ontario, Canada
June 2016	Centre de Recherche Cerveau et Cognition, Toulouse, France
June 2016	Freie Universität Berlin, Berlin, Germany



June 2016 Goethe Universität Frankfurt, Frankfurt am Main, Germany

June 2016 Toronto Western Hospital, Toronto, Ontario, Canada

June 2015 International Conference on Perceptual Organization, Centre for Vision Research York University, Toronto, Ontario, Canada

June 2015 Google Inc., Mountain View, California, USA

June 2015 Department of Psychology, Stanford University, California, USA

May 2015 University of Toronto/Tel Aviv University Joint Imaging Conference, Toronto, ON, Canada

March 2015 Department of Computer Science, University of Toronto, Ontario, Canada

Nov. 2014 Centre for Vision Research, York University, Toronto, Ontario, Canada

Oct. 2014 Department of Psychology, University of Toronto, Ontario, Canada

July 2013 Center for Information Technology, Fondazione Bruno Kessler, Trento, Italy

June 2013 University of Pennsylvania, Philadelphia, Pennsylvania, USA

Nov. 2012 Department of Psychology, University of Toronto, Toronto, Ontario, Canada

May 2011 Cogfest, Center for Cognitive Science, The Ohio State University, Columbus, Ohio, USA

Feb. 2011 Donders Institute for Brain, Cognition and Behaviour, Nijmegen, Netherlands

Feb. 2011 Netherlands Institute for Neuroscience, Amsterdam, Netherlands

June 2010 Max Planck Institute for Biological Cybernetics, Tübingen, Germany

Feb. 2010 Department of Cognitive Science, Johns Hopkins University, Baltimore, Maryland, USA

Feb. 2010 Department of Psychology, The Ohio State University, Columbus, Ohio, USA

June 2009 Leibniz Institute for Neurobiology, University of Magdeburg, Germany

Apr. 2008 Beckman Institute Director's Seminar, University of Illinois, Urbana, Illinois, USA

March 2008 Workshop on "Characterizing and decoding distributed brain representations" at Cosyne, Snowbird, Utah, USA

Dec. 2007 Workshop on "Models and mechanisms of visual attention: a critical appraisal" at NIPS, Whistler, British Columbia, Canada

Feb. 2007 Scene Understanding Symposium at MIT, Cambridge, Massachusetts, USA

June 2005 Workshop on "Attention and Performance in Computational Vision" at CVPR San Diego, California, USA

Nov. 2004 MIT Perceptual Science Laboratory, Cambridge, Massachusetts, USA

Aug. 2003 Monterey Bay Aquarium Research Institute, Moss Landing, California, USA

Nov. 2002 Institute of Neuroinformatics, ETH and University of Zurich, Switzerland

## **SERVICE**

2014 – present Chair, IT Committee, Department of Psychology, University of Toronto

2014 – present Member, MRI Committee, Department of Psychology, University of Toronto

2018 Search Committee for two Canada Research Chair positions, Rotman Research Institute

- 2012 – 2014 Member, Committee for the establishment of a graduate minor in Cognitive and Brain Sciences, The Ohio State University
- 2012 – 2014 Member, Executive Committee of the Center for Brain and Cognitive Sciences
- 2012 – 2014 Member, Management Committee of the Center for Cognitive and Behavioral Brain Imaging, The Ohio State University
- 2011 – 2014 Chair, fMRI Technology Committee, Center for Cognitive and Behavioral Brain Imaging, The Ohio State University

## ACADEMIC ACTIVITIES

- 2017 – current Chair, Steering Committee for the International Workshop on Pattern Recognition in Neuroimaging
- June 2016 Program Chair, 6<sup>th</sup> International Workshop on Pattern Recognition in Neuroimaging, Trento, Italy
- June 2015 Member of the Program Committee, 5<sup>th</sup> International Workshop on Pattern Recognition in Neuroimaging, Stanford, California, USA
- June 2015 Ad-hoc member of the Cognition and Perception study section at the National Institutes of Health, Annapolis, Maryland, USA
- Since 2014 Action Editor, Neural Networks
- June 2014 Member of the Program Committee, 4<sup>th</sup> International Workshop on Pattern Recognition in Neuroimaging, Tübingen, Germany
- June 2013 Member of the Program Committee, 3<sup>rd</sup> International Workshop on Pattern Recognition in Neuroimaging, Philadelphia, PA, USA
- July 2012 Member of the Program Committee, 2<sup>nd</sup> International Workshop on Pattern Recognition in Neuroimaging, London, UK
- March 2008 Organizer, Workshop on “Characterizing and decoding distributed brain representations” at Computational and Systems Neuroscience, Snowbird, Utah
- Dec. 2007 Organizer, Workshop on “Models and mechanisms of visual attention: a critical appraisal” at Neural Information Processing Systems, Whistler, British Columbia
- 2006 – current Author and maintainer of freely available **SaliencyToolbox** software (<http://saliencytoolbox.net>)  
More than 12,000 downloads since 2006, cited in more than 950 papers.
- July 2002 Organizer, Workshop on “Saliency-based visual attention” at the Neuromorphic Engineering Summer School, Telluride, Colorado

### Ad-hoc Reviewing:

Nature Communications; PNAS; Current Biology; Journal of Neuroscience; Psychological Review; Cerebral Cortex; Neuroimage; Neuropsychologia; Brain Research; Neural Networks; Neural Computation; Journal of Vision; Vision Research; Journal of Experimental Psychology: General; Journal of Experimental Psychology: Human Perception and Performance; Cognition; Attention, Perception & Psychophysics; Frontiers in Perception Science; PLoS One; PLoS Computational Biology; IEEE Transactions on

Pattern Analysis and Machine Intelligence; International Journal of Computer Vision; Computer Vision and Image Understanding; Biological Cybernetics; IEEE Transactions on Image Processing; IEEE Transactions on Multimedia; Pattern Recognition; Multimedia Systems Journal; Journal of Information Science and Technology.

## **MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS**

Society for Neuroscience (SfN)  
Vision Sciences Society (VSS)  
Association for Psychological Science (APS)  
Senior Member, Institute for Electrical and Electronics Engineers (IEEE)  
IEEE Computer Society

## **MENTORING**

### **Current trainees**

Charlotte Leferink (Ph.D.)  
Yaelan Jung (Ph.D.)  
Claudia Damiano (Ph.D.)  
John Wilder (postdoc)

### **Student theses**

2015 Claudia Damiano: M.A. in Psychology, University of Toronto  
2014 Daniel Berman: M.A. in Psychology, The Ohio State University  
2013 Thomas O'Connell: Honors in Psychology, The Ohio State University  
2012 Dandan Shen: M.Sc. in Electrical and Computer Engineering, The Ohio State University  
2011 Loan Vo: Ph.D. in Electrical and Computer Engineering, University of Illinois at Urbana-Champaign

### **Student achievements**

2018 Charlotte Leferink (grad): NSERC Postgraduate Scholarship  
2017 Yaelan Jung (grad) wins travel award for CCN conference  
2017 Claudia Damiano, Yaelan Jung (grad): winner of graphics design competition for VSS T shirts  
2017 Matt Lowe (co-supervised grad): VSS Student Travel Award  
2017 Claudia Damiano (graduate): NSERC Postgraduate Scholarship  
2016 Ann Sheng (undergraduate): Outstanding Achievement in Neuroscience Award  
2016 Yaelan Jung (graduate): VSS Student Travel Award  
2015 Ann Sheng (undergraduate): Undergraduate Summer Research Award, Department of Physiology, University of Toronto  
2015 Ann Sheng (undergraduate): Undergraduate Research Fund, University of Toronto  
2014 Yaelan Jung (graduate): Ontario Trillium Scholarships  
2014 Andrew Serger (undergraduate): 1st prize at the Denman Undergraduate Research Forum  
2013 Amanda Kaczmarek (undergraduate): Social and Behavioral Sciences Research Award

- 2013 Amanda Kaczmarek (undergraduate): Best Proposed Research Award, Undergraduate Research Colloquium in Neuroscience
- 2013 Thomas O'Connell (honors): 3<sup>rd</sup> prize at the Denman Undergraduate Research Forum
- 2012 Dandan Shen (graduate): Best Poster Presentation Award at Cogfest 2012
- 2012 Thomas O'Connell (honors): Student representative for the Brazil Research Exchange Program to the University of Sao Paulo
- 2012 Thomas O'Connell (honors): 1st prize at the Denman Undergraduate Research Forum
- 2012 Thomas O'Connell (honors): Undergraduate Research Opportunity (URO) Summer Fellowship
- 2011 Thomas O'Connell (honors): Undergraduate Research Scholarship