THE NEW VISTAs IN VISION RESEARCH

VISION RESEARCH CONFERENCE 2023

York University, Toronto

Monday, December 4th	
11:00AM	**Registration**
1:00PM	**Welcome Remarks** Robert Allison, CVR Director **Opening Keynote** Richard Wildes - York University *The role of motion in action recognition: Man, machine and application*
	Talk session 1 - Visual Cognition Chairs: Dale Stevens and Shayna Rosenbaum
2:00PM	Zeynep Saygin - The Ohio State University *Innate neural scaffolds for mental function*
2:45PM	**Break**
3:00PM	Charan Ranganath - University of California, Davis *Cognition without walls: The role of structure in perception, episodic memory, and spatial navigation*
3:45PM	**Break**
4:00PM	Alex Martin - National Institutes of Health *Perception from the inside out*
4:45PM	**Break**
5:00 - 7:30PM	**Reception / Poster Session 1**

Tuesday, December 5th

Talk session 2 - Visually Guided Reach
Chairs: Jonathan Michaels and Lauren Sergio

9:00AM	Gunnar Blohm - Queen's University *Decoding cortical movement planning computations from magnetoencephalography (MEG)*
9:45AM	**Break**
10:00AM	Hans Scherberger - German Primate Center *Hand movement control in the primate brain*
10:45AM	**Break**
11:00AM	Miriam Spering - University of British Columbia *Multisensory integration in visually-guided action*
11:45AM-1:30PM	**Lunch Break**
1:00 - 2:30PM	**Poster Session 2**

Talk session 3 - Accuracy & Illusion
Chairs: Kevin Lande and Jake Beck

2:30PM	Fiona Macpherson and Derek Brown - University of Glasgow *Illusions exist: Naïve realism is false*
3:15PM	**Break**
3:30PM	Bence Nanay - University of Antwerp *Eye movements and the feeling of presence*
4:15PM	**Break**
4:30PM	EJ Green - Massachusetts Institute of Technology *The complexity of appearances*

Wednesday, December 6th

9:00AM - 4:00PM	**Industry Day**

Talk session 4 - Active Vision
Chairs: Erez Freud and Kohitij Kar

9:00AM	Grace Lindsay - New York University *Modeling the neural mechanisms of attention in artificial neural networks*
9:45AM	**Break**
10:00AM	Maryam Vaziri-Pashkham – University of Delaware *Vision for real-time interactions with objects and people*
10:45AM	**Break**
11:00AM	Katharina Dobs - Liebig University Giessen How do real-world task demands shape the functional architecture of the visual system?
11:45AM-1:30PM	**Lunch Break / Industry Recruitment / Demos**

Talk session 5 - Machine Learning & AI
Chairs: Joel Zylberberg and Michael Brown

1:30PM	Blake Richards - McGill University *A brain-inspired measure for assessing the quality of deep net representations*
2:15PM	**Break**
2:30PM	Chris Pal - École Polytechnique de Montréal *From Deep Learning, Visual Perception and Language Understanding to AI*
3:15PM	**Break**
3:30PM	Eva Dyer - Georgia Institute of Technology *Toward a multi-task, multi-source foundation model to advance large-scale neural data analysis*
4:15PM	**Break**
4:30 - 6:30PM	**Lab Tours**

Thursday, December 7th

Talk session 6 - Creative Visualizations
Chairs: Shital Desai and Laura Levin

9:00AM

Miriam Bopp - Universität Marburg
Augmented Reality in Neurosurgery

9:45AM **Break**

10:00AM

Jane Tingley - York University
From roots to pixels: Foresta-inclusive

10:45AM **Break**

11:00AM

Michael Proulx - Meta Reality Labs
Visual interactions in Extended Reality (XR)

11:45AM-1:30PM **Lunch Break**

12:30 - 2:00PM **Poster Session 3**

2:00PM

Talk session 7 - Guidance & Control of Gaze
Chairs: Jeff Schall and Liya Ma
Eileen Kowler - Rutgers University
Anticipatory smooth pursuit eye movements: why do we need them, how do they work, and what could possibly go wrong?

2:45PM **Break**

3:00PM

Suliann Ben Hamed - Centre national de la recherche scientifique
Dynamics of attentional control at multiple time scales

3:45PM **Break**

4:00PM

Greg Zelinsky - Stony Brook University
Reward controls goal-directed attention

4:45PM **Break**

5:00 - 6:00PM

Closing Keynote
Doug Crawford - York University
Cortical mechanisms for ego-allocentric integration in the gaze system

6:30 - 9:30PM **Conference Banquet**

Poster Session 1
Monday, December 4, 5 – 6:30pm

Presenting Author	Additional Authors	Title	Board #
Aalim Makani	Katharina Pöhlmann, Behrang Keshavarz, Raheleh Saryazdi	Pupil dilation in virtual reality and its relation with measures of visually induced motion sickness and vection	1
Amin Fadaeinejad	Abdallah Dib, Marcus Brubaker, Nikolaus Troje	Talking heads for game and telecommunication systems	2
Arefeh Farahmandi	Parisa Abedi, Gunnar Blohm	An alternative model to divisive normalization for multisensory integration	3
B. Marius 't Hart	Patrick Cavanagh	Frame induced position shifts extend outside the frame in space but not in time	4
Camille Proszanski	Brittney Hartle, Laurie Wilcox	Does reaching aid the scaling of stereoscopic depth?	5
Elizaveta Yakubovskaya	Hamidreza Ramezanpour, Kohitij Kar	Robustness of object position representation across spatial and temporal context in the macaque inferior temporal cortex	6
Emily D'Alessandro	Danai Kokkinopoulou, Jasmine Mosavi, Karolina A. Bearss, Ashkan Karimi, Rachel Bar, Joseph FX DeSouza	Dance improves affective state in individuals with Parkinson's Disease	7
Gaelle N. Luabeya	Ada Le, Erez Freud, Simona Monaco, J. Douglas Crawford	Cortical integration and functional connectivity in reach/grasp fMRI study	8
Hamid Ramezanpour	Ghazaleh Darmani, Regina Annirood, Can Sarica, Talyta Grippe, Artur Vetkas, Andres Lozano, Samuel Pichardo, Robert Chen	Selective modulation of visual attention and response inhibition by transcranial ultrasound stimulation of pulvinar and globus pallidus internus	9
Hamidreza Dastmalchi	Seyed Nima, Tayarani Bathaie, Aijun An	Incorporating GAN and codebook priors for robust blind face restoration	10
Harshitha Koppisetty	Robert Allison, Laurie Wilcox	Perception of materials in virtual reality based on their audiovisual properties	11
Helio Perroni Filho	Mohammad Akhavan, Nizwa Javed, Arian Haghparast, James Elder	AirChair: Smart wheelchair convoys for airports	12
Jason J. Yu	Fereshteh Forghani, Konstantinos G. Derpanis, Marcus A. Brubaker	Long-term photometric consistent novel view synthesis with diffusion models	13
Jiali Song	Anureet Jeji, Avery Chua, Cristeidy Gonzalez, Benjamin Wolfe	Are unreliable car warnings still helpful to the driver? The effect of auditory cues on road hazard detection in dynamic road scenes.	14
Jinani Sooriyaarachchi	Curtis L. Baker, Chang'an Zhan	Cortical state effects vary across different neuronal subclasses in the primary visual cortex	15
John Kennedy	Marta Wnuczko	Mirror-image pointing illusion: Visible arms, occlusion and overshooting	16
Khushbu Patel	Laurie M. Wilcox, Laurence T. Maloney, Krista A. Ehinger, Jaykishan Y. Patel, Emma Wiedenmann, Richard F. Murray	Lightness constancy in real and virtual environments	17

Lina Musa	Amirhossein Ghaderi, Ying Chen, J. Douglas Crawford	Hierarchical functional modularity of brain networks for egocentric and allocentric memory-guided reaching	18
Matthew C. Macdonald-Dale	Stefania S. Moro, Peter J. Kohler, Jennifer K. E. Steeves	Retinotopic mapping of primary visual cortex of people with one eye	19
Matthew Kowal	Mennatullah Siam, Md Amirul Islam, Neil D. B. Bruce, Richard P. Wildes, Konstantinos G. Derpanis	Quantifying and learning static vs. dynamic information in deep spatiotemporal networks	20
Onoise Gerald Kio	Robert Allison	Data-driven prediction of outcomes of a target search task	21
Parham Eftekhar	Gene Cheung	Image satellite inpainting	22
Ricky Chow	Stevenson Baker, Deena Herman, Shimin Mo, Jennifer A. Bugos, Claude Alain, R. Shayna Rosenbaum	Mismatch negativity as an index of auditory pattern separation in aging	23
Seohee Han	Morteza Rezanejad, Dirk B. Walther	Memorability of line drawings of scenes: the role of contour properties	24
Simran Rooprai	Harsimran Dogra, Joseph FX DeSouza, Jenna Smith-Turchyn, Emily D'Alessandro, Nicole Anderson, Karolina Bearss	Assessing gait and cognitive outcomes in individuals with Parkinson's Disease after a six-year dance intervention	25
Tasfia Ahsan	Erez Freud	From 2D to 3D: importance of depth information to high level vision	26
Teodora Neagu	Rebecca L Hornsey, Arleen Aksay, Laurie M. Wilcox	Integration of motion parallax and stereopsis for surface segmentation	27
Tim Henley	Jason Pina, Josh Tindell, Jérôme Lecoq, Natalia Orlova, Sheila Calderon, Blake Richards, Joel Zylberberg	Reconstructing pyramidal neurons recorded from awake behaving subjects	28
Viswajit Vembukumar	Nikolaus Troje	Evaluating gaze perception with simulated motion parallax	29
Xianze Meng	Alexander Barnett, Joseph FX DeSouza	Structural & functional connectivity correlation between PMN and Hippocampus during segmentation and recall of naturalistic stimuli	30
Yeganeh Gharedaghi	Gene Cheung, Xianming Liu	Retinex-based image denoising / contrast enhancement using gradient graph laplacian regularizer	31
Zainab Haseeb	Silvia Guidi, Anna Kosovicheva, Benjamin Wolfe	Stimuli for sentence readability – a new, validated corpus for studies of digital reading	32

Poster Session 2
Tuesday, December 5, 1 – 2:30pm

Presenting Author	Additional Authors	Title	Board #
Ahmed Nadeem	Björn Jörges, Laurence R. Harris	Perception of motion in depth during visually simulated self-motion	1
Alban flachot	Jaykishan Patel, Khushbu Patel, Tom S. A. Wallis, Marcus Brubaker, David H. Brainard, Richard F. Murray	Can deep neural networks for intrinsic image decomposition model human lightness constancy?	2
Anaa Salim Zafer	Sara Djambazovska, Hamidreza Ramezanpour, Gabriel Kreiman, Kohitij Kar	The Impact of Scene Context on Visual Object Recognition: Comparing Humans and Monkeys	3
Andrew Chaston	Naomi Thomas, Ewa Niechwiej-Szwedo	Investigating eye-hand coordination during the performance of Fitts' task	4
Andrew King	Laura Mikula, Shanaathanan Modchalingam, Jacob Boulrice, Denise Henriques	Can tools be used as cues for visuomotor adaptation in virtual reality?	5
Elena McKee	Lisa Christian, Ewa Niechwiej-Szwedo	Exploring Relationships in Typically Developing Children Through Vision and Motor Tests	6
Faruq Afolabi	Xue Teng, Rob Allison, Laurie Wilcox	Understanding Affordances and the Effects of Distortions in Shared Mixed Reality Environments	7
Hongyi Guo	Alexander Schütz, Robert Allison	Assimilation of optic flow in saccadic eye movements	8
Jaykishan Patel	Alban Flachot; Javier Vazquez-Corral; David H. Brainard; Thomas S. A. Wallis; Marcus A. Brubaker; Richard F. Murray	A deep convolutional neural network trained to infer surface reflectance is deceived by mid-level lightness illusions	9
Julie Ouerfelli-Ethier	Pisella, Laure, Khan, Aarlenne Z.	Spatiotemporal competition resolution during anti-saccades	10
Khushi Patel	Zainab Haseeb, Benjamin Wolfe, Anna Kosovicheva	Effects of different highlighting styles on reading speed and comprehension	11
Krista Mitchnick	R. Shayna Rosenbaum, Boyer D. Winters	Object, tactile, and spatial oddity judgements are impaired in DG-compromised rats but enhanced in CA1-compromised rats	12
Lynn Schmittwilken	Paul Jolly; Michele Rucci	Foveal perimetry: Towards mapping visual sensitivity across the foveola	13
Maren Wehrheim	Na Yeon Kim, Ralph Adolphs, Kohitij Kar	Probing the link between dynamics of "face-selectivity" in macaque IT cortex and facial emotion discrimination behavior	14
Marta Wnuczko	John M. Kennedy, Selene Carboni	Directions yes, screens no: how perspective is used by an early-totally-blind man	15
Mohamed Abdelhack	Akio Murakami, Keita Suzuki, Fan Cheng, Kei Majima, Yukiyasu Kamitani, Hidehiko Takahashi	Uncovering the Visual Processing Imbalance in Schizophrenia Using Deep Neural Network Representations	16

Na Yeon Kim	Kushin Mukherjee, Shirin Taghian Alamooti, Ralph Adolphs, Kohitij Kar	Leveraging Artificial Neural Networks to Enhance Diagnostic Efficiency in Autism Spectrum Disorder: A Study on Facial Emotion Recognition	17
Naila Ayala	Ewa Niechwiej-Szwedo, Suzanne Kearns, Elizabeth Irving, Shi Cao	Exploring Gender Differences in Gaze Behaviour During Simulated Flight	18
Nicole Smeha	Diana J. Gorbet, Lauren E. Sergio	Visuomotor control networks change as a function of hormone levels in working-aged women.	19
Nikita Klimenkov	Svetlana Kovalenko, Elena Gorbunova	The influence of perceptual load on cognitive fatigue	20
Nupur Katyare	R. WONG, S. EVERLING, Liya Ma	Prefrontal ensemble dynamics in spatial working memory in marmosets	21
Parsa Balalaie	Kayne Park, Stephen H. Scott, Jolande Fooken	Investigation of eye-hand coordination during rapid interception task	22
Patrick Cavanagh	Stuart Anstis	The frame effect is suppressed for stationary probes	23
Pranavan Thirunavukkarasu	Steven P. Errington, Amirsaman Sajad, Jeffrey D. Schall	Laminar architecture of visual responses in supplementary eye field of macaques	24
Remy Cohan	Jennifer Steeves	The effect of continuous theta burst stimulation to primary visual cortex on binocular rivalry	25
Romesa Khan	Matthias Niemeier, Hongsheng Zhong, Jack Cai	Predictive coding dynamics in a grasping neural network increase robustness to noise	26
Sanjana Kapisthalam	Martina Poletti	Temporal modulations of extrafoveal sensitivity to changes during fixation	27
Sara Djambazovska	Gabriel Kreiman, Kohitij Kar	Visual angle and image context alter the alignment between deep convolutional neural networks and the macaque ventral stream	28
Shanaathanan Modchalingam	Andrew King, Denise Y. P. Henriques	Effects of sensory prediction errors and visual environment cues on internal model updating and switching during motor learning	29
Shirin Taghian Alamooti	Hamidreza Ramezanpour, Na Yeon Kim, Ralph Adolphs, Kohitij Kar	Developing a non-human primate model to dissect the neural mechanisms of facial emotion processing relevant in autism spectrum disorder	30
Shouyu Ling	Max Kramer, Sophia Robert, Christina Patterson, Michael Granovetter, William Welch, Arish Alreja, Avniel Ghumann, Marlene Behrmann	Neural Dynamics of Category-Specific Visual Perception in Adolescents: Insights from sEEG	31
Yousif Kashef Alghetaa	Simon Kornblith, Kohitij Kar	Quantifying Alignment between Human and Machine Explanations: A Novel Approach Using Explanation Masked Images	32

Poster Session 3
Thursday, December 7, 12:30 – 2pm

Presenting Author	Additional Authors	Title	Board #
Arleen Aksay	Brittney Hartle, Robert S. Allison, Elizabeth L. Irving, Sion Jennings, Laurie M. Wilcox	Visual illusions in aviation: Simulating the black hole phenomenon	1
Ashley Clark	Martina Poletti	Eccentricity driven modulations of visual crowding across the central fovea	2
Bjoern Joerges	Laurence Harris	Estimating speed and time-to-contact during visually simulated lateral self-motion	3
Brandy Murovec	Behrang Keshavarz	Can cognitive factors influence illusory self-motion perception (vection)? Exploring the role of image realism and expectation in younger and older adults.	4
Claudia Damiano	Maarten Leemans, Johan Wagemans	Exploring the semantic inconsistency effect in scenes using a continuous measure of linguistic similarity	5
Devin Heinze Kehoe	Mackenzie Burgeon R Becket Ebitz	Overt attentional strategies during multi-dimensional value-based decision-making	6
Hamid Ramezanpour	Sachi Sanghavi, Kohitij Kar	Leveraging computational and animal models of vision to probe atypical emotion recognition in autism	7
Harrison Ritz	Jonathan Pillow, Jonathan Cohen	Task preparation is reflected in neural state space dynamics	8
Jennifer Lin	Hongying Wang, Saihong Sun, Xiaogang Yan, John Douglas Crawford	Influence of a visual landmark shift on memory-guided reaching in monkeys	9
Krista Kelly	Dorsa Mir Norouzi; Norah Nyangau; David Stager; Cynthia L Beauchamp; Prashanthi Giridhar	Ocular motor function and postural control during static balance in children with amblyopia	10
Lynn K. A. Soerensen	James J. DiCarlo, Kohitij Kar	Probing the effects of object category learning on the macaque inferior temporal cortex	11
Maria Orlando	Alberto Umiltà, Federico Fornaciari, Elisa Ciaramelli, R. Shayna Rosenbaum	Examining the effects of real-world experience on lab-based scene memory	12
Maryum Khan	Shanaathanan Modchalingam, Andrew King, Marius 't Hart, Denise Henriques	Effects of tool use and perturbation during motor adaptation on hand localization	13
Mohad Nasir	Xiaoxin Chen, Andrew Silva, Ewa Niechwiej-Szwedo	Investigating the association between sensory eye dominance and fixation stability	14
Oluwaseyi Elizabeth Shodipe	Robert Allison	Modelling the relationship between the objective measures of car sickness	15
Raphael Gastrock	Edward Ody, Denise Y. P. Henriques, Bernard Marius 't Hart	Motor adaptation versus de novo learning: Comparing neural markers of movement preparation and outcome error processing between two distinct visuomotor tasks	16

Rezaul Karim	Mennatullah Siam, Richard P. Wildes	MED-VT: Multiscale encoder-decoder video transformer for video segmentation	17
Rupsha Mutsuddi	Melanie Baljko, Shital Desai	Daily rituals in everyday activities for community dwelling adults with dementia for assistive prompting technology design – understanding the current research landscape	18
S.M. Hossein Hosseini	Aleksander Trajcevski, Stefan de Lasa, James Elder	Monocular depth estimation using semantics and geometry	19
Sara Chaparian	Jeffrey Schall, Peter Kohler	Relating variability in scalp EEG to variability in cortical morphology	20
Shaya Samet	Baker, N, Freud, E, Elder, J, Kohler, PJ	EEG studies of configural shape perception	21
Shenoa Ragavaloo	Peter Kohler	Brain responses to symmetries in naturalistic novel three-dimensional objects	22
Takao Fukui	Mingze Zhang, Akira Hasegawa	Effects of short-term chopsticks usage on kinematics of subsequent reach-to grasp and uplift movements: Relation to object familiarity and autistic traits	23
Veronica Nacher	Parisa Abedi-Khoozani, Harbandhan Arora, Xiaogang Yan, Hongying Wang, and John Douglas Crawford	A cortical mechanism for eye-head-hand coordination: lPFC 'gaze' signals encode future head and hand motion during visually guided reach.	24
Wanyi Lyu	Jeffrey Schall	Resolving stages of processing in visual search: Investigation of behavioral errors and the underlying covert operations with frontal eye field neurophysiology double factorial design	25
Xue Teng	Laurie Wilcox, Robert Allison	Increasing motion parallax gain compresses space and 3D object shape	26
Yael Goldstein Marcusohn	Rahaf Asaad, Leen Asaad, and Erez Freud	Shape sensitivity in the dorsal pathway does not depend on attention	27
Yara Mary Iskandar	Christopher Lee, Sebastian Bosse, Peter J Kohler	Spatial mechanisms mediating visual responses to symmetries in textures	28
Zoe Stearns	Martina Poletti	Comparing the temporal dynamics of pre-microsaccadic and presaccadic vision	29
Zoha Ahmad	Krista Kelly, Erez Freud	Reduced perception-action dissociation in children with amblyopia	30