

Centre for Vision Research

July 1, 2008-June 30, 2009

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1. Mandate of the Unit

Our mandate is to pursue interdisciplinary research and training in the broadly-defined visual sciences and their applications. The sense of vision does not stand alone: it is the primary input not only for understanding the world around us, but also for guiding action in the world, for determining interaction with the world and inherently integrates with the other sensory processes. The CVR provides a simple and effective infrastructure that provides members with maximal freedom in pursuing their research programmes while encouraging collaboration among members and across disciplines.

2. Organizational Structure of the Unit

Director
Associate Director
CVR Steering Committee (see below)
Administrative Assistant
Systems Administrator

CVR Steering Committee 2008/09

Director	Hugh Wilson
Associate Director	Laurie Wilcox
Appointed by the Director	Richard Wildes
Ex-officio	Ian P. Howard
Ex-officio	John K. Tsotsos
Member	Kari Hoffman
Member	Richard Murray
Member	Jennifer Steeves
Member	Carol Westall, Adjunct Rep.
Member	Student Rep.

3. Active Membership List

York University Faculty Members of the Centre (2008-2009)

Scott Adler	Associate Professor of Psychology, Faculty of Health Science Interests: development of eye movement control, visual selective attention, object recognition, and visual expectations
Rob Allison	Associate Professor of Computer Science Interests: stereoscopic vision, perceptual issues in virtual environments, eye movements
Doug Crawford	Professor of Psychology, Biology, and Kinesiology & Health Sciences Canada Research Chair in Visual-Motor Neuroscience Chair, Neuroscience Diploma Program Interests: three-dimensional eye and head movements, eye-hand coordination, trans-saccadic perceptual integration, modeling, neurophysiology
Joseph DeSouza	Assistant Professor of Psychology, Biology and Neuroscience Diploma, York University Interests: systems neuroscience, frontal cortex, attention, fMRI, corollary discharge, eye position signals and oculomotor neurophysiology
James Elder	Associate Professor of Psychology, Computer Science, and Mathematics Interests: human and computer vision
Mazyar Fallah	Assistant Professor of Kinesiology & Health Science Interests: visual perception and attention, object processing, oculomotor systems.
Laurence Harris	Chair, Department of Psychology, Faculty of Health Science Professor of Psychology and Biology Interests: perception and coding of space and self-motion
Denise Henriques	Assistant Professor Kinesiology & Health Science and Psychology Interests: motor learning, multisensory integration, visuomotor control, eye-hand coordination
Kari Hoffman	Assistant Professor of Psychology, Faculty of Health Science Interests: face processing, learning, memory and plasticity, sleep oscillations
Ian Howard	Distinguished Research Professor of Psychology and Biology Interests: space perception, eye movements, visual-vestibular interactions
Richard Hornsey	Associate Professor of Computer Science and Physics

	Interests: integrated electronic sensors, biologically inspired image sensors, low vision enhancement systems, sensors for space applications
Michael Jenkin	Professor of Computer Science Interests: computer vision, mobile robotics, immersive visual displays
Richard Murray	Assistant Professor of Psychology Interests: visual psychophysics, spatial vision, 3D shape perception
Hiroshi Ono	Distinguished Research Professor of Psychology Interests: visual perception of direction and distance, eye movement
David Regan	CAE/NSERC Industrial Research Professor Distinguished Research Professor of Psychology and Biology Professor of Ophthalmology and Medicine, University of Toronto Fellow of the Royal Society of Canada Foreign Fellow of the Royal Netherlands Academy of Science Interests: psychophysics of spatial vision, motion, stereopsis, colour vision, vision aviation, visually evoked magnetic and electrical brain activity, visual disorders, auditory psychophysics
Josée Rivest	Associate Professor of Psychology, Glendon College Department of Psychology of the Baycrest Centre for Geriatric Care Interests: neuropsychology, face and object recognition, rehabilitation of visual neglect
Lauren Sergio	Associate Professor of Kinesiology, Faculty of Health Science Interests: neural mechanisms of visually guided reaching in parietal and precentral cortex
Minas Spetsakis	Associate Professor of Computer Science Interests: computer vision and robotics
Jennifer Steeves	Assistant Professor of Psychology, Faculty of Health Science Adjunct Scientist Neurosciences and Mental Health, The Hospital for Sick Children Research Institute Adjunct Assistant Professor, Department of Ophthalmology and Vision Sciences, Faculty of Medicine, University of Toronto Interests: face and scene processing in neurological patients and one-eyed observers; motion processing in strabismus
Martin Steinbach	Distinguished Research Professor of Psychology and Biology Director, Vision Science Research, Toronto Western Hospital

Senior Scientist, Dept. of Ophthalmology, Hospital for Sick Children
Director of Research, Department of Ophthalmology, University of
Toronto

Interests: eye movements, visual-motor coordination, clinical disorders of
the oculomotor system

Wolfgang Stuerzlinger Associate Professor of Computer Science

Interests: human-computer interaction, virtual reality, computer graphics

John Tsotsos

Distinguished Research Professor of Vision Science

Professor of Computer Science

Canada Research Chair in Computational Vision

Adjunct Professor, Dept. of Computer Science, University of Toronto

Adjunct Professor, Dept. of Ophthalmology, University of Toronto

Interests: human and machine vision, computational models of attention,
motion understanding, robotics

Laurie Wilcox

Associate Professor of Psychology, Faculty of Health Science

Associate Director, Centre for Vision Research

Interests: stereopsis/depth perception

Richard Wildes

Associate Professor of Computer Science

Interests: spatiotemporal analysis of visual information, motion analysis,
binocular vision, gesture recognition, biometrics

Frances Wilkinson

Professor of Psychology, Faculty of Health Science

Affiliated Scientist, Division of Applied and Interventional Research,

Toronto Western Research Institute, University Health Network, Toronto

Adjunct Professor - Department of Ophthalmology, University of Toronto

Interests: involvement of the visual system in migraine; intermediate
visual form perception using psychophysical, computational and fMRI
methodologies

Hugh Wilson

ORDCF Chair of Biological and Computational Vision

Director, Centre for Vision Research

Fellow, Canadian Institute for Advanced Research

Director, CIHR Training Grant in Vision Health Research

Fellow, Optical Society of America

Interests: psychophysical and neural models of form vision; fMRI studies
of cortical form vision, nonlinear dynamics of cortical function

Membership Categories

The steering committee will assign each person to the category that it feels fits best. New members appointed by director with advice from steering committee. The goal is to ensure all members have opportunity to influence the CVR.

Member - Tenured York Faculty who are active in research and primary research interest is consistent with CVR mandate

Associate - Contractually –limited York faculty who are active in research and interest is strongly relevant to CVR mandate

Sr. Research Associate - Sr. Research Associates who are active in research and interest is strongly relevant to CVR mandate

Affiliate - Research Associates, graduate students, post-doctoral fellows, visitors, programmers, industrial partners, administrative assistants, staff (sponsored by a CVR Member, Associate or Adjunct)

Adjunct - Faculty outside York who would have qualified for Member or Associate status or who is a collaborator of a Member or Associate

Benefits of Membership

Member - use of CVR facilities/labs; use of administrative assistant and/or secretary; eligible for membership on steering committee; eligible to be a CVR grant PI; included on CVR web pages, brochure; eligible as primary supervisor of CVR graduate student; eligible for overhead sharing

Associate - use of CVR facilities/labs; use of CVR technical staff for your lab; use of administrative assistant and/or secretary; eligible for membership on steering committee; eligible to be a CVR grant PI; included on CVR web pages, brochure;

Sr. Research Associate - use of CVR facilities/labs; use of administrative assistant and/or secretary; included on CVR web pages, brochure

Affiliate - use of selected CVR facilities/labs; use of administrative assistant and/or secretary; included on CVR web pages, brochure

Adjunct - enjoys regular visits to CVR (minimum, one day per month); desk to work at while visiting; use of selected CVR facilities/labs; included on CVR web pages, brochure; co-investigator status on CVR grants; small honorarium for expenses; eligible as co-supervisor of CVR graduate student

Renewal/Review/Termination of Membership

- Continued membership to CVR includes participation (i.e. seminars, attending annual retreat, bi-annual conference, submission to the annual report and CVR brochure)
- Mid-term review of Director
- Service category to be added to the CVR Annual report
- Problem cases will be dealt with by sending a letter to the member.

4. Activities of the Unit

- Grants for 2008/09 - **\$5,378,691**
- CVR hosted a U50 Event in 2009, The International Conference Vision in 3D Environments, held on June 23rd – 26th, 2009.
- Ian Howard Lecture Series. This named lecture series brought two outstanding senior vision scientists to York to present overviews of their research: Geoff Hinton (University of Toronto) and Olivier Faugeras (INRIA France). The series is a continued success, so CVR will continue the Ian Howard Lectures indefinitely.
- Weekly Seminar Series. In addition to the Ian P. Howard lectures, the CVR hosts a regular Friday seminar series throughout fall and winter semesters.
- Vision Research Summer School for undergraduates. In an effort to attract more outstanding graduate students to York to do research with faculty in CVR, the CVR Summer School in Visual Science 2009 for undergraduates was held on June 1-5. Over 100 students from around the world applied to participate, and the top 24 were chosen to attend with all expenses paid. Students came from Canada, the US, and several foreign countries. All were uniformly impressed by the research presentations and lab experiences with CVR faculty. We are very optimistic that this will translate into more outstanding applicants to do graduate research at CVR, but we will not know until graduate applications are all submitted in February 2010.
- Summer Workshop in Vision Health Research. York holds the only CIHR Training Grant in Vision Health Research in Canada, and it is run by the Director of CVR. This grant provides funds to attract outstanding graduate students and postdoctoral fellows to the CVR. As part of their training, we hold an annual summer workshop. This past year there were presentations by four outstanding vision scientists from both Canada and the US on their research into issues in vision health. In addition to attendance by our CIHR trainees, we also invite any interested faculty from York and surrounding universities to attend. The Summer Workshop in Vision Health Research was held in conjunction with the CVR International Conference described above.
- Publications for 2008/09:

Books	- 3
Chapters in Books	- 22
Refereed Journals	- 98
Proceedings	- 116
Technical Reports	- 2
Conference Presentations	- 43
Colloquia	- 32

5. **Measures taken to Promote Equity as Enunciated in the University Academic Plan**

The CVR is an interdisciplinary research group in vision. As such, our seminar series and international conference are designed to foster interdisciplinary research and collaborations. As the largest and most prominent vision research group in Canada, we feel that we are highly successful in this endeavour. As all faculty are hired by academic departments at York, CVR is not permitted to hire any faculty. However, our membership reflects broad diversity in accordance with equity guidelines. Indeed, among our most recent new CVR faculty, 2 of 4 are female.

6. **Graduate Training Activities/Accomplishments**

MA	- 15
MSc	- 31
PhD	- 53
Post-Doctoral Fellows	- 15
Research Scientists	11

7. **Any Changes in Physical Space at the Unit**

There was no change in the physical space occupied by CVR during 2008-2009. However, planning and construction have progressed significantly on the Sherman Health Sciences Research Building, which is due to be completed in December, 2009. Several faculty from CVR will move their research activities into Sherman at the beginning of 2010. A major new facility at the Sherman will be the York fMRI centre, which should be operational by the summer of 2010.

8. **List of all Contractual Obligations Entered into By or on Behalf of the Unit**

The CVR as a whole did not enter into any contractual obligations during 2008-2009.