

Faculty

- Doug Crawford Assistant Professor of Psychology and Biology.
Interests: three-dimensional eye and head movements, visuomotor neurophysiology.
- James Elder Assistant Professor, Psychology and Adjunct Professor of Computer Science.
Research Associate, Human Performance Laboratory.
Interests: visual psychophysics, computational vision, image coding.
- Keith Grasse Associate Professor of Psychology and Biology.
Project Leader, Human Performance Laboratory.
Interests: neurophysiology of visual and auditory systems, eye movements, neuropharmacology.
- Laurence Harris Professor of Psychology and Biology.
Project Leader, Human Performance Laboratory.
Interests: neurophysiology and perception of visual, vestibular and oculomotor systems.
- Ian Howard Distinguished Research Professor of Psychology and Biology.
Director of Centre for Vision Research. Co-Director of Human Performance Laboratory.
Interests: space perception, eye movements, visual-vestibular interactions.
- Michael Jenkin Associate Professor and Chair of Computer Science.
Project Leader, Human Performance Laboratory.
Interests: computer vision, robotics and image understanding.
- Peter K. Kaiser Professor Emeritus of Psychology and Biology.
Interests: colour vision, sensory processes, physiological optics, human factors.
- Evangelos E. Milios Associate Professor of Computer Science.
Interests: computer vision, auditory scene analysis, human-computer interaction.
- Hiroshi Ono Professor of Psychology.
Project Leader, Human Performance Laboratory.
Interests: visual perception of direction and distance, eye movements.
- Jonathan Ostroff Associate Professor of Computer Science.
Research Associate, Human Performance Laboratory.
Interests: real-time systems, control systems.
- David Regan Distinguished Research Professor of Psychology and Biology.
CAE/NSERC Industrial Research Professor. Fellow of the Royal Society of Canada.
Professor of Ophthalmology and Medicine, University of Toronto.
Co-Director, Human Performance Laboratory.
Interests: psychophysics of visual motion, colour and stereopsis; vision in aviation; visually evoked magnetic and electrical brain activity; visual disorders; auditory psychophysics.
- Josée Rivest Associate Professor of Psychology, Glendon Campus.
Interests: multiple attributes in localization of contours and perceptual learning.
- Minas Spetsakis Associate Professor of Computer Science.
Research Associate, Human Performance Laboratory.
Interests: computer vision and robotics.
- Paul Stager Professor of Psychology.
Research Associate, Human Performance Laboratory.
Interests: human factors in aerospace performance and system design.
- Martin Steinbach Professor of Psychology and Biology.

Director, The Eye Research Institute of Canada.
 Adjunct Professor and Director of Research in Ophthalmology, University of Toronto.
 Senior Scientist, Dept. of Ophthalmology, Hospital for Sick Children.
 Interests: eye movements, visual-motor coordination, disorders of oculomotor system.

Laurie Wilcox Assistant Professor, Psychology.
 Interests: stereopsis/depth perception; symmetry perception.

Research Associates

Dr. Reuben Gellman	With M. Steinbach
Dr. Esther Gonzalez	With M. Steinbach
Mr. Eric Groen	With I.P. Howard
Dr. Xiang-Hua Hong	With D. Regan
Dr. Elizabeth Irving	With M. Steinbach
Linda Lillakas	With H. Ono
Dr. Feng Lu	With E. Milios
Ms. Heather Jenkin	With I.P. Howard
Dr. Maureen Reed	With M. Steinbach
Dr. Marian Regan	With D. Regan
Mr. Jim Zacher	With I.P. Howard

Post Doctoral Fellows

Dr. Masahiro Ishii	With I.P. Howard
Dr. Masayuki Sato	With I.P. Howard
Dr. Makoto Ichikawa	With H. Ono
Dr. Shoji Sunaga	With P. Kaiser

Graduate students

Student	Year	Supervisor
Robert Allison	2nd year Ph.D.	Howard
Nicole Aucoin	3rd year M.Sc.	Jenkin
Isabelle Boutet	1st year M.A.	Rivest
Carol Dengis	Graduated Winter '97	Steinbach
Xueping Fang	2nd year M.Sc.	Howard
Tim Field	3rd year M.Sc.	Ostroff
Rob Gray	3rd year Ph.D.	Regan
Phillip Grove	1st year M.A.	Ono
Herb Goltz	Graduated Spring '97	Steinbach
Carl Gruden	3rd year M.Sc.	Ostroff
Lorraine Gunther	3rd year M.A.	Ono
Denise Henriques	2nd year M.A.	Crawford
Ghee Ho	6th year Ph.D.	Stager
Avalon Johnson	2nd year M.Sc.	Jenkin
Radha Kohly	1st year M.A.	Regan
Agnieszka Kopinska	1st year M.A.	Harris
Eliana Klier	2nd year M.Sc.	Crawford
Dan Kriechman	1st year M.Sc.	Harris
Jochen Lang	2nd year M.Sc.	Jenkin
Iraj Mantegh	4th year Ph.D.	Jenkin
Peter Mente	1st year Ph.D.	Harris

Ng Siu-Ming	3rd year M.Sc.	Spetsakis
Matt Robinson	3rd year M.Sc.	Jenkin
Greg Reid	1st year M.Sc.	Milios
Michael Smith	2nd year M.A.	Crawford
Jennifer Steeves	1st year M.A.	Steinbach
Ken Tam	1st year M.Sc.	Jenkin
Grant Wainman	1st year M.A.	Ono
Susanna Yanivker	1st year M.Sc.	Grasse
Dan Zikovitz	1st year M.Sc.	Harris
Sun Zuening	2nd year M.Sc.	Spetsakis

Students Arriving Sept. 1997

Student	Year	Supervisor
Melike Ceylan	1st year M.A.	Crawford
Dalia Darwish	1st year M.Sc.	Howard
Richard Goldberg	1st year M.Sc.	Elder
Yeola Harris	1st year M.A.	Wilcox
Gang Hu	1st year M.Sc.	Howard
Michelle Hudoba	1st year M.Sc.	Harris
Sherry Trithart	1st year M.A.	Elder

Visiting Scientists 1996-97

Dr. Graham Barnes	MRC unit on hearing and balance, University of London, U.K
Dr. Yuqing Fu	Dept. of Radio Engineering, Southeast University, Nanjing, China
Dr. Terunori Mori	Tamavagwa University, Japan
Dr. Sasha Petrov	Academy of Sciences of the U.S.S.R.
Dr. Kenzo Sakurai	Tohoku Gakuin University, Japan
Dr. Andy Smith	Dept. of Psychology, Royal Holloway College, Univ. of London, UK
Dr. Koichi Shimono	Tokyo University of Mercantile Marine, Japan
Dr. Masahiro Suzuki	Chukyo University, Nagoya, Japan
Dr. Hiroyasu Ujike	National Institute of Bioscience and Human Technology, Tsukuba, Japan,

Visiting Scientists 1997-98

Dr. Andy Clarke	Benjamin Franklin Klinikum, Berlin
Dr. Brian Rogers	Oxford University, U.K.
Dr. Kenzo Sakurai	Tohoku Gakuin University, Japan

Awards and Honours

Doug Crawford

MRC Scholar
Alfred P. Sloan Fellow

David Regan

Sir William Dawson Medal, Royal Society of Canada

Paul Stager

Member of the US National Academy of Sciences Panel on Human Factors in Air Traffic Control Automation
The panel operates under the auspices of the US National Research Council's Committee on Human Factors and the National Academy of Sciences

Martin Steinbach

Appointed as Director of the Eye Research Institute of Canada

Laurie Wilcox

NSERC Women's Faculty Award

E. Lynn Kirshner Memorial Scholarship for 1996

Awarded to **Christine Portfors-Yeoman** and **Herb Goltz**. Christine was cited for her senior-authored papers, Portfors-Yeoman, C.V. and Regan, D. Discrimination of the direction and the speed of motion in depth of a monocularly-visible target from binocular information alone. *Journal of Experimental Psychology: Human Perception and Performance*, in press, and Portfors-Yeoman, C.V. and Regan D. Cyclopean discrimination thresholds for the direction and speed of motion in depth, *Vision Research*, in press. Christine is now a Post-Doctoral Fellow in Ohio. Herb was cited for his senior-authored paper, Vertical eye position control in darkness: Orbital position and body orientation interact to modulate drift velocity". *Vision Research*, in press. Herb is now a Post-Doctoral Fellow at the University of Rochester.

Research Grants (Annual for 1996/97)

Crawford	
MRC operating Grant. Brainstem control of 3-D eye and head movements	69,078
MRC Scholarship. Neural control of 3-D eye and head movements	59,000
NSERC research Grant. Human eye, head, and arm movements in 3-D space	21,000
Sloan Fellowship	23,777
Elder	
York University Startup Funds	20,000
NSERC Research Grant (4 years)	25,000
NSERC Equipment Grant	25,630
Faculty of Arts Research Grants	6,150
Grasse	
NSERC Operating Grant	28,000
NSERC Equipment Grant	20,000
Harris	
NSERC Operating Grant. The detection of conflict in visual-vestibular interactions	28,000
NSERC Collaborative Research Grant(see Jenkin)	
Howard	
NSERC Operating Grant. Visual pursuit and induced visual motion	39,000
DCIEM Contract. Post-rotary effects on attitude perception during rolling manoeuvre	78,000
CSA Contract. Experiments on the Neurolab Space Shuttle Mission	67,000
Ontario Centre of Excellence Grant with Grasse, Harris, Jenkin, Ono and Regan, HP Lab	339,000
Jenkin	
NSERC Operating Grant. Active Stereo	22,000
NSERC Equipment Grant with Dymond and Amanatides	12,856
DREA Sonar Contract with Milios	15,000
NSERC Collaborative Research Grant(with L. Harris)	68,000
SPAR	7,425
Discovery Channel, Network game	2,000
Kaiser	
NSERC Operating Grant. Studies in colour vision	29,000
Milios	
NSERC Operating Grant Computational Auditory Scene Analysis	25,500
PWGSC Contract. Numeric and Symbolic Processing for Sonar Info. Management with Jenkin	20,000
PWGSC Contract. Towed Array Shape Estimation	50,000
Ontario Hydro. Acrobat: autonomous climbing robots	8,000
Ono	
NSERC Operating Grant. Sensory and motor aspects of space perception	30,500
NATO Travel Grant with Wade and Swanston. Motion and orientation in spatial vision	10,900
Noso Gakuen Grant Head-movement and binocular eye movement in 3-D space	40,000
Ostroff	
NSERC Operating Grant	20,000
Regan	
NSERC/CAE Industrial Chair	132,452
NSERC Operating Grant	71,000
AFOSR Grant	246,622
Rivest	
NSERC Operating Grant. the role of attention on processing multiple attributes images	18,000
Spetsakis	
NSERC Operating Grant. Visual motion analysis	18,000
Steinbach	
NSERC Operating Grant. Human oculomotor control	31,000

MRC Post Doctoral Fellowship - Elizabeth Irving	45,000
MRC with S.P. Kraft - Visual Function in enucleated and Strabismic Children	8,300
Atkinson College Minor Research Grant- Development of an At Home Test of Strabismus	1,200
Wilcox	
NSERC Women's Faculty Award (ongoing)	54,000
Faculty of Arts Research Grant	3,500
Ontario/Quebec Exchange Grant	3,000
Ad Hoc Travel Grant	850
Total annual value of grants	\$1,557,740.

Publications July 1996 to June 1997

Books

Jenkin M. and Harris L. (Eds). *Computational and psychophysical mechanisms of visual coding*. Cambridge University Press, Cambridge, UK., 1997. ISBN 0-521-57104-9 361 pages.

Chapters in Books

Crawford, J.D. (1997) Visuomotor codes for three-dimensional saccades. In M. Jenkins and L. Harris (Eds.) *Computational and psychophysical mechanisms of visual coding*, Cambridge, pp 74-102.

Crawford, J.D., Vilis, T. and Guitton, D. (1997) Neural coordinate systems for head-fixed and head-free gaze shifts. In M. Fetter, H. Misslisch, and D. Tweed (Eds.) *Three-dimensional kinematic principles of eye, head, and limb movements in health and disease*, in press.

Crawford, J.D. (1997) Geometric Transformations in the visual-motor interface for saccades. In M. Fetter, H. Misslisch, and D. Tweed (Eds.) *Three-dimensional kinematic principles of eye, head, and limb movements in health and disease*, in press.

Harris, L. (1997) The coding of self motion. In M. Jenkin and L. Harris (Eds.) *Computational and psychophysical mechanisms of visual coding*. Cambridge University Press, Cambridge, UK. pp 157-183.

Harris, L. and Jenkin, M. (1997) Computational and psychophysical mechanisms of visual coding. In M. Jenkin and L. Harris (Eds.) *Computational and psychophysical mechanisms of visual coding*. Cambridge University Press, Cambridge, UK. pp 1-19.

Jenkin, H.L. (1997) A historical review of the imagery debate. In M. Jenkins and L. Harris (Eds.) *Computational and psychophysical mechanisms of visual coding*, Cambridge, pp 268-295.

Uhlir, T., and Jenkin, M. (1997) Real time issues for active vision hardware. In H. Christensen and J. Crowley (Eds.), *Active vision hardware*, Kluwer, in press.

Coombs, D., and Jenkin, M. (1997) The geometry of active binocular vision. In H. Christensen and J. Crowley (Eds.) *Active vision hardware*, Kluwer, in press.

Ono, H., Sato, T. Shioiri, S., and Ujike, H. (1997) An aftereffect of Bill Dember in motion: Probing the signal for motion parallax. In R. Hoffman, M. Sherrick, and J. Warm (Eds.) *Integrating perception across psychology: Perspectives on motivation, choice, and individual differences*. Washington, DC: American Psychological Association, in press.

Ono, H. (1997) Aftereffects of Bill Dember in Motion. In R. Hoffman, M. Sherrick, and J. Warm (Eds.), *Psychology beyond the threshold (Festschrift)*. University of Cincinnati Press, in press.

Stager, P. and Wickens, C. (1997) Strategies for research. In C. Wickens, A. Mavor, and J. McGee (Eds.), *Flight to the future: Human factors in air traffic control automation*. (Prepared by the U.S. National Research Council Panel on Human Factors in Air Traffic Control Automation.). Washington, DC: National Academy Press. pp. 197-225.

Stager, P. (1997) Panel contributor to C. Wickens, A. Mavor, R. Parasuraman, and J. McGee, (Eds.), *Human operators and automation in air traffic control*.. (Prepared by the U.S. National Research Council Panel on Human Factors in Air Traffic Control Automation.). Washington, DC: National Academy Press, in press.

Regan, D. (1997) Perceptual motor skills and human motion analysis. In G. Salvendy (Ed.) *Handbook of Human factors And ergonomics*, New York: Wiley. 174-218.

Papers in Refereed Journals

Crawford, J.D. and Guitton, D. (1997) Visuomotor transformations required for accurate and kinematically correct saccades. *Journal of Neurophysiology*, 78, 1447-1467.

Crawford, J.D. and Guitton D. (1997) Motor Adaptation of the primate functional oculomotor range during head-free gaze shifts. *Journal of Neurophysiology*, in press.

Dengis, C. A., Steinbach, M.J., Ono, H., Gunther, L.N. Fanfarillo, R., Steeves, J.K.E. and Postiglione, S. (1996) Learning to look with one eye: the use of head turn by normals and strabismics. *Vision Research*, 36, 3237-3242.

Dengis, C.A., Steinbach, M.J., Kraft, S.P. (1997) Spatial localization changes following botulinum toxin injections into eye muscles. *Experimental Brain Research*, in press.

- Dengis, C., Steinbach, M.J., Ono, H. and Gunther, L. (1997) Learning to wink voluntarily and to master monocular tasks: A comparison of normal vs. strabismic children. *Binocular Vision*, 12, 113-118.
- Dengis, C., Simpson, T., Ono, H. and Steinbach, M.J. (1997) Measuring cyclopean function in children and adults under open-loop testing conditions. *Vision Research*, in press.
- Elder, J.H. and Zucker, S.W. (1997) Evidence for boundary-specific grouping. *Vision Research*, in press.
- Elder, J.H. and Zucker, S.W. (1997) Local scale control for edge detection and blur estimation. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, in press.

Papers in Refereed Journals cont'd.

- Goltz, H.C., Irving, E.L., Hill, J.A., Kraft, S.P. and Steinbach, M.J. (1996) Dissociated vertical deviation: Head and body orientation affect the amplitude and velocity of the vertical drift. *Journal of Pediatric Ophthalmology and Strabismus*, 33, 307-313.
- Goltz, H.C., Steinbach, M.J. and Gallie, B.L. (1997) Head turn in 1-eyed and normally sighted individuals during monocular viewing. *Archives of Ophthalmology*, 115, 748-750.
- Goltz, H.C., Irving, E.L., Steinbach, M.J. and Eizenman, M. (1997) Vertical eye position control in darkness: Orbital position and body orientation interact to modulate drift velocity. *Vision Research*, 37, 789-798.
- Gray, R. and Regan, D. (1996) Accuracy of reproducing angles: is a right angle special? *Perception*, 25, 531-542.
- Gray, R. and Regan, D. (1997) Estimating time to collision using binocular retinal image information alone, monocular retinal image information alone and a combination of the two. *Vision Research*, in press.
- Gray, R. and Regan, D. (1997) Spatial frequency discrimination and detection characteristics for gratings defined by orientation texture. *Vision Research*, in press.
- Gray, R. and Regan, D. (1997) Vernier step acuity and bisection acuity for texture-defined form. *Vision Research*, 37, 1713-1723.
- Harris, L.R. and Lott, L.A. (1996) Sensitivity to full-field visual movement compatible with head rotation: variation with eye-in-head position. *Visual Neurosciences*, 13, 277-282.
- Harris, L.R. and Lieberman, L. (1996) Auditory stimulus detection is not suppressed during saccadic eye movements. *Perception*, 25, 999-1004.
- Telford, L. and **Howard, I.P.** (1996) Role of optical flow field asymmetry in the perception of heading during linear motion. *Perception and Psychophysics*, 58, 283-288.
- Kaneko, H. and **Howard, I.P.** (1996) Relative size disparities and the perception of surface slant. *Vision Research*, 36, 1919-1930.
- Howard, I.P. (1996) Alhazen's neglected discoveries of visual phenomena. *Perception*, 25, 1203-1218.
- Howard, I. P. and Wade, N. (1996) Ptolemy's contributions to the geometry of binocular vision. *Perception*, 25, 1189-1202.
- Kaneko, H. and **Howard, I.P.** (1997) Spatial properties of shear disparity processing. *Vision Research*, 37, 315-324.
- Howard, I.P. (1997) Interaction within and between the spatial senses. *Journal of Vestibular Research*, 7, 1.36.
- Kaneko, H. and **Howard, I. P.** (1997) Spatial limitation of vertical-size disparity processing. *Vision Research*, in press.
- Howard, I.P., Zacher, J., and Allison, R. (1997) Postrotary nystagmus and turning sensations after active and passive turning. *Journal of Vestibular Research*, in press.
- Howard, I.P., Allison, R., and Zacher, J. (1997) The dynamics of vertical vergence. *Experimental Brain Research*, in press.
- Spillmann, L., Anstis, S., Kurtenbach, A., and **Howard, I.P.** (1997) Reversed visual motion and self-sustaining eye oscillations. *Perception*, in press.
- Irving, E. L., Goltz, H.C., Steinbach, M.J. and Kraft, S.P. (1997) Objective eye movement recording: A tool in the diagnosis of dissociated vertical deviation. *Binocular Vision*, 12, 181-190.
- Tsotsos, J. K., Verghese, G., Dickinson, S., **Jenkin, M.**, Jepson, A., **Milios, E.**, Nuflo, F., Stevenson, S., Black, M., Metaxas, D., Cluhane, S., Ye, Y. and Mann, R. (1997) PLAYBOT: A visually-guided robot for physically disabled children. *Image and Vision Computing*, in press.

- Dudek, G., **Jenkin, M., Milios, E.** and Wilkes, D. (1996) Map validation and self-location for a robot with a graph-like map. *Robotics and Autonomous Systems*, in press.
- Dudek, G., **Jenkin, M., Milios, E.** and Wilkes, D. (1996) A Taxonomy for Multi-Agent Robotics. *Autonomous Robots*, 3, 375-397.
- Ono, H., Phillips, K. A. and Leneman, M. (1996) The content of an abstract: de jure and defacto. *American Psychologist*, 51, 1338-1340.
- Shimono, K., **Ono, H.**, Saida S. and Mapp, A. (1997) A methodological caveats for monitoring eye position with Nonius stimuli. *Vision Research*, in press.
- Shimono, K., Egusa, H. and **Ono, H.** (1997) Binocular single vision: the limitation of the fusion and suppression theories. *Shinrigaku Hyoron (Japanese Psychological Review)* (In Japanese), in press.
- Nakamizo, S., **Ono, H.** and Ujike, H. (1997) Subjective staircase: A variation of the wallpaper illusion. *Perception and Psychophysics*, in press.
- Reed, M.J., Steeves, J. and Steinbach, M.J. (1997) Comparison of contrast letter thresholds in unilateral eye enucleated subjects and binocular and monocular control subjects. *Vision Research* , 37, 2465-2469.

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- Portfors-Yeomans, C.V. and **Regan, D.** (1996) Cyclopean discrimination thresholds for the direction and speed of motion in depth. *Vision Research*, 36, 3625-3279.
- Vincent, A. and **Regan, D.** (1997) Judging the time to collision with a simulated textured object: effect of mismatching rates of expansion of size and of texture elements. *Perception and Psychophysics*, 59, 32-36.
- Portfors-Yeomans, C.V. and **Regan, D.** (1997) Discrimination of the direction and speed of a monocularly-visible target from binocular information alone. *Journal of Experimental Psychology: Human Perception and Performance*, 23, 227-243.
- Regan, D., Hajdur, L.V. and Hong, X.H. (1996) Two-dimensional aspect ratio discrimination for shape defined by orientation texture. *Vision Research*, 36, 3695-3702.
- Portfors-Yeomans, C.V. and **Regan, D.** (1997) Just-noticeable difference in the speed of cyclopean motion in depth and of cyclopean motion within a frontoparallel plane. *Journal of Experimental Psychology: Human Perception and Performance*, in press.
- Regan, D. (1997) Visual factors in catching and hitting. *Journal Sports Sciences*, in press.
- Voisin, A., Elliot, D.B. and **Regan, D.** (1997). Babe Ruth: With vision like that how could he play baseball? *Optometry and Vision Science*, in press.
- Rivest, J., Boutet, I. and Intriligator, J. (1997) Perceptual learning of orientation discrimination by more than one attribute. *Vision Research*, 37(3), 273-281.
- Wilcox, L.M. and Hess, R.F. (1996) Is the site of non-linear filtering in stereopsis before or after binocular combination? *Vision Research*, 36, 391-399.
- Timney, B.N., **Wilcox L.M.**, Symons, L. and O'Shea, R. (1996) The effects of occlusion method on the amount of interocular transfer of visual aftereffects. *Vision Research.*, 36, 707-716.
- Wilcox, L.M. and Hess, R.F. (1997) Scale selection for 2nd-order (non-linear) stereopsis. *Vision Research*, in press.

Technical Reports

- Howard. I.P. Disorientation training in non-motion based simulator. Final Report for Contract W7711-5-7256, *Defence and Civil Institute of Environmental Medicine*, January, 1997.
- Howard. I.P. Judgments of the inclination and slant of surfaces in stereoscopic display systems. Final Report for Contract W7711-4-7217, *Defence and Civil Institute of Environmental Medicine*, January, 1997.
- Irving, E.L., Goltz, H.C. and Steinbach, M.J. (Video-based eyetracker: a clinical tool in assessing binocular vision. *Vision Science and Its Applications. Optical Society of America - Technical Digest Series*, 1997, Vol. I, 190-193.
- Regan, D. Visual and auditory sensitivities and discriminations. Final Report for Grant F49620-94-1-0083, *AFOSR*, December, 1996.

Published Abstracts and Proceedings

- Allison, R.S., Howard, I.P., Rogers, B.J. and Bridge, H. Applied Vision association Conference on Depth Perception: Psychophysics and Physiology. *Perception*, Suppl., 1997, in press.
- Allison, R.S., Howard, I.P., Rogers, B.J. and Bridge, H. Efficiency of slant and inclination perception as a function of temporal frequency. *Investigative Ophthalmology and Visual Science*, 1997, 38, S907.
- Crawford, J.D., Goldberg, M.E., Andersen, R.A., and Van Opstal, J. What is the role of eye position information in spatial perception and visuomotor control? *Neural Control of Movement*, Cancun, Mexico, April, 1997, 8-13.
- Crawford, J.D. Listing's law: What's all the hubbub? *Vision and Action Conference*, York University, 1997.
- Gold, B.T., Goel, V., Kapur, S., Houle, S. and **Crawford, J.D.** Neuroanatomic correlates of deductive and inductive reasoning. *Society of Neuroscience Abstract*, 1997.
- Dengis, C.A., Simpson, M.J., Steinbach M.J. and Ono, H. The Cyclops effect in adults: Sighting without visual cues. *Investigative Ophthalmology and Visual Science*, 1997, 38, 4262.
- Fang, X., Howard, I.P. Allison, R.S. and Zacher, J.E. Effects of stimulus size and eccentricity on vertical vergence. *Investigative Ophthalmology and Visual Science*, 1997, 38, 986.
- Goltz, H.C., Irving, E.L., Kraft, S.P. and Steinbach, M.J. Latent nystagmus in dissociated vertical deviation can include a vertical component. *Investigative Ophthalmology and Visual Science*, 1997, 38, 1143
- Gonzalez, E.G., Steeves, J.K.E. and Steinbach, M.J. Central and peripheral acuity in enucleated, strabismic and visually normal observers. *Investigative Ophthalmology and Visual Science*, 1997, 38, 72.
- Gray, R. and Regan, D. Vernier step acuity and bisection acuity for texture-defined form. *Investigative Ophthalmology and Visual Science*, 1997, 38, S635.
- Harris, L.R. and Mente, P. Is head movement coded by channels? *Journal of Vestibular Research*, 1996, 6, S68.

Published Abstracts and Proceedings cont'd.

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- Harris, L.R. and Mente, P. Is head movement coded by channels? *Neuro-ophthalmology*, 1996,16, 284.
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- Henriques, D.Y.P., Crawford, J.D., Klier, E.M. Smith, M.A. Testing between craniotopic and retinotopic models of spatial memory in a visually guided pointing task. *Investigative Ophthalmology and Visual Science*, 1997, 38, S988.
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- Howard, I.P., Groen, E. and Jenkin, H. Visually induced self inversion and levitation. *Investigative Ophthalmology and Visual Science*, 1997, 38, S80.
- Ichikawa, M. and Ono, H. Depth threshold and motion threshold with different common velocity. *19th European Conference on Visual Perception..* Strasbourg, France. 1996, *Perception*, 1996, 25, Supplement 121-122.
- Ichikawa, M. and Ono, H. The motion illusion from flickering elements, with head movement, as a function of apparent velocity. *Japanese Vision Society Meeting*, Tokyo, Japan. *Vision*, 1997, in press.
- Ichikawa, M. and Ono, H. Depth perception from motion parallax and different viewing times. *Investigative Ophthalmology and Visual Science*, 1997, 38, 368.
- Irving, E.L. and Steinbach, M.J. Development of the saccadic amplitude/velocity relationship. *Investigative Ophthalmology and Visual Science*, 1997, 38 268
- Mantegh, I., **Jenkin, M.R.M.** and Goldenberg, A.A. A probability-based approach to model-based path planning. *Proceedings IEEE/RSJ IROS '97*, Grenoble, France, 1997, in press.
- Mantegh, I. **Jenkin, M.R.M.** and Goldenberg, A.A. Solving the find-path problem: A complete and less complex approach,using the BIE methodology. *Proceedings of the 1997 International Symposium on Computational Intelligence and Automation*, Monterey, CA., September, 1997, in press.

- Dudek, G., **Jenkin, M.**, **Milios, E.** and Wilkes, D. On building and navigating with a local metric environmental map. *Third ECPD International Conference on Advanced Robotics, Intelligent Automation and Active Systems*, Bremen, Germany, 1997, in press.
- Mantegh, I., **Jenkin, M.R.M.** and Goldenberg, A.A. Reformulating the potential field method for goal-attaining, real-time path planning. *Third ECPD International Conference on Advanced Robotics, Intelligent Automation and Active Systems*, Bremen, Germany, 1997, in press.
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- Crawford, D. Organized and chaired symposium on role of internal representations of eye position in perception and action at *Neural Control of Movement Conference*, 1997.

- Elder, J.H. Invited Commentary on Pessoa et al., "Finding out about filling in", *The Mind as a Scientific Object: an Interdisciplinary Seminar*, Toronto, Oct., 1996.
- Elder, J.H. Brightness filling-in of natural images. *European Conf. on Visual Perception*, Helsinki, Aug. 1997.
- Assad, A., Wall III, C., **Harris L.R.** and Aharon, G. Non-linear Otolith-Visual Interactions During Z-axis Linear Movement in Humans Revealed by the Oculomotor Response to Different Frequencies Presented Simultaneously to the Two Systems. Presented to the *Association for Research in Otolaryngology*, 1997.
- Harris, L.R., Kopinska, A. and Lieberman, L. Auditory localization during eye and head movement. Centre for Vision Research, *International Conference on Vision and Action*, York University, June, 1997.
- Harris, L. and Zikovitz, D. Frames of reference used during driving. Centre for Vision Research, *International Conference of Vision and Action*, York University, June, 1997.
- Henriques, D.Y.P. and Crawford, J.D. Visual space is remembered in a gaze centered rather than a headcentric frame. Centre for Vision Research, *International Conference on Vision and Action*, York University, 1997.
- Howard, I.P. Types of binocular disparity: their properties and uses. Invited paper at the *ATR Workshop on Human Perception*, ATR Research Laboratories, Kyoto, Japan, July, 1997.
- Howard, I.P. Tumbling and levitating in immersive visual environments. Centre for Vision Research, *International Conference of Vision and Action*, York University, June, 1997.
- Howard, I.P. Visual-vestibular interactions in the perception of the body vertical. Invited paper at the *International Conference of Perception and Action*, University of Toronto, July, 1997.
- Ichikawa, M. and Ono, H. Perception of depth and concomitant motion with different viewing times. Centre for Vision Research, *International Conference on Vision and Action*, York University, June, 1997.
- Lang, J. and **Jenkin, M.** Active sensing with VIRTUE. VI'96, Toronto, Ontario, 1996.
- Jenkin, M., Wilkes, D., and Tsotsos, J.K. Control strategies for ARK, an Autonomous Robot for a Known environment. *IASTED Int. Conference on Applications of Control and Robotics*, Orlando, FL, 193-196, 1996.
- Jenkin, M.R.M. Stereopsis near the horopter. *4th ICARCV*, Singapore, 1996.
- Klier, E.M. and Crawford, J.D. A 3-D eye position-dependent visuomotor transformation is required in order to generate accurate saccades. Centre for Vision Research, *International Conference on Vision and Action*, York University, June, 1997.
- Kreichman, D. Jenkin, M. and Harris, L.R. Using linear visual flow to encourage subjects to interpret a tilt as a linear acceleration. *International Conference on Vision and Action*, York University, June, 1997.
- Regan, D., Portfors, C.V., Kohly, R., and Hamstra, S. Hitting, catching and collision avoidance. Centre for Vision Research, *International Conference on Vision and Action*, York University, June, 1997.
- Smith, M.A. and Crawford, J.D. A Matrix-tensor model of the 3-D vestibulo-ocular reflex. Centre for vision Research, *International Conference on Vision and Action*, York University, June, 1997.
- Steinbach, M.J., Goltz, H.C. and Irving, E.L. Dissociated vertical deviation: A challenge to the oculomotor theorist and the strabismus surgeon. *Annual Department of Ophthalmology Research Day Meeting*, University of Toronto, 1997.
- Wilcox, L.M. and Hess, R.F. When stereopsis does not depend on contrast. *European Conference on Visual Perception*, Helsinki, August, 1997.
- Wilcox L.M. Symmetry Detection: local grouping and global perception. Centre for Vision Research, *International Conference on Vision and Action*, York University, Toronto, June, 1997.

Colloquia

Doug Crawford

Dept. Physiology, University of Toronto, April 1997

Michael Jenkin

Research careers in computer science, UCC Science Related Careers Conference, February, 1997.

Stereopsis and the Horopter, Vision Group, Carnegie Mellon University, April, 1996.

Hiroshi Ono

York University, November 1996

ATR Human Information Processing Research Laboratories, Kyoto, Japan, February 1997

Chiba University, Japan, March 1997

National Institute of Bioscience and Human-Technology, April 1997

Kettlewell Eye Research Institute, April 1997

Martin Steinbach

University of Waterloo - Optometry, 1996

Hospital for Sick Children, Toronto - Ophthalmology Rounds, 1997

State University of New York College of Optometry, 1996

Laurie Wilcox

Visual Illusions and the Brain" 7th Canadian International Youth Forum, Ontario Science Centre, Oct., 1997.

Collaborative Research

Doug Crawford

Dr. Douglas Tweed, Dept. Physiology, U. Western Ont., Dept. Neurology, U. Tubingen. Three dimensional geometry of eye movements.

Dr. Tutis Vilis, Dept. Physiology, U. Western Ontario. Neurophysiology of eye movements.

Dr. Daniel Guitton, Montreal Neurological Institute. Eye-head coordination during gaze shifts.

Keith Grasse

Dr. Colin Blakemore, Dept. of Physiology, University of Oxford, Oxford, England.

Dr. Franklin Sengpiel, Dept. of Physiology, University of Oxford, Oxford, England.

Dr. Julie Mendelson, Division of Life Sciences, University of Toronto, Scarborough, Ontario.

Dr. Alison Sekuler, Dept. of Psychology, University of Toronto, Toronto, Ontario

Dr. Pat Bennett, Dept. of Psychology, University of Toronto, Toronto, Ontario

Dr. Ed Gruberg, Dept. of Biology, Temple University, Philadelphia, U.S.A.

Dr. Rob Douglas, Dept. of Ophthalmology, University of British Columbia, Vancouver, B.C.

Dr. Julie Mendelson of U of T. and Good Vibrations Inc. Auditory and vestibular feedback for robotic control.

Laurence Harris

Dr. Andy Smith, University of London.

Dr. Gary Paige, University of Rochester.

Dr. Andy Clarke, Benjamin Franklin Klinikum, Berlin, Germany.

Dr. Conrad Wall, MIT.

Ian P. Howard

Dr. Ron Kruk, CAE. Visual factors in flight simulators.

Dr. C. Oman, MIT. Space shuttle Neurolab mission.

Dr. B. Cheung, DCIEM. Orientation in flight simulators.

Michael Jenkin

Dr. Harris (visual-vestibular interactions in virtual reality environments)

Dr. Dymond (network cryptography)

Dr. Lesperance (cognitive robotics)

Dr. Dudek (McGill), Prof. Miliotis (York), & Dr. Wilkes (Ontario Hydro) -swarm robotics

Evangelos Miliotis

Dr. G. Dudek, Dept. of Computer Science, McGill University.

Dr. E. Prassler, FAW, University of Ulm, Germany. Dynamic mobile robot navigation system.

Dr. J. Tsotsos, Dept. of Computer Science, Univ. of Toronto. Architectures for auditory attention.

Collaborative Research cont'd.

Hiroshi Ono

Drs. Nicholas Wade and Michael Swanston at University of Dundee on visual motion and orientation.

Dr. Kaneko of ATR Human Information Processing Research Laboratories, Kyoto, Japan

David Regan

Dr. R. Kruk of CAE. Visual factors in aviation and flight simulator design.

Dr. L. Reid, Institute of Aerospace Science, University of Toronto. Flight simulators.

Martin Steinbach

Dr. Iain Donaldson, University of Edinburgh.

Laurie Wilcox

Drs. Curtis Baker and Robert Hess, McGill University. Properties of 2nd-order stereopsis and motion.

Dr. David Simmons, Dept. of Vision Sciences, Glasgow Caledonian University. Range effects in Stereopsis.

Dr. David Knill (University of Pennsylvania) and Zili Liu (NEC Research Institute). Symmetry perception in skewed images.

International Conference on Vision and Action

The Centre for Vision Research hosted The International Conference on Vision and Action on June 24-28, 1997 at York University. There were 107 participants which included scientists, post-doctoral fellows and graduates students from Canada, Europe, U.S.A. and Japan.

Centre for Vision Research Lecture Series

Lori Bernstein	NASA	Integrating real and virtual displays.
Otmar Bock	Cologne, Germany	Motor skills in changed gravity.
James Elder	NEC Institute	In defense of the contour code.
Zoubin Ghahramani	U. of T.	Internal Models in visuomotor control.
Henry Gordon	Magician	Visual illusions and magic.
Vinod Goel	York. U.	The seats of reason: A localization study of inductive and deductive reasoning with pet.
Eric Groen	TNO, Netherlands	Human ocular torsion during sinusoidal body roll.
Laurence Harris	York U.	Auditory localization and space perception.
Eileen Kowler	Rutgers	Eye movements and attention.
Brian Rogers	Oxford	Role of vergence in binocular stereopsis.
A.I. Sabra	Harvard	Alhazen's revolution in the study of visual perception.
A. Sekuler and P. Bennett	U. of T.	Aging and vision.
John Senders	U. of T.	Distribution of eye fixation over information-rich displays
Andy Smith	Royal Holloway, UK.	What's special about second order motion.
Eric Sondag	Oosterveld	Morphological and functional changes of the vestibular system in hamsters born in hypergravity.
Evan Thompson	York U.	Finding OUT about filling in: perceptual completion in science and the philosophy of perception.
visual		
Dave Tomlinson	U. of T.	Eye movements during movement from one place to another.
A.J. Van Opstal	Cath. Univ, Nether.	Nucleus reticularis tegmenti pontis and three dimensional saccadic control.
Laurie Wilcox	York U.	2nd-order stereopsis.