

Faculty

- Doug Crawford Assistant Professor of Psychology and Biology.
Interests: three-dimensional eye and head movements, visuomotor neurophysiology.
- Keith Grasse Associate Professor of Psychology and Biology.
Project Leader, Human Performance Laboratory.
Interests: neurophysiology of the visual system, eye movements, auditory neurophysiology, 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 the Centre for Vision Research.
Co-Director of the 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, computational 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 CAE/NSERC Industrial Research Professor.
Distinguished Research Professor of Psychology and Biology, York University.
Professor of Ophthalmology and Medicine, University of Toronto.
Co-Director, Human Performance Laboratory.
Fellow of the Royal Society of Canada.
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, York University.
Interests: multiple attributes in localization of contours and perceptual learning.

Faculty cont'd.

- 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.
Associate Director, The Eye Research Institute of Canada.
Adjunct Professor of Ophthalmology, University of Toronto.
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.

Welcome New Faculty Members

- Laurie Wilcox Assistant Professor, Psychology.
Interests: stereopsis/depth perception.
- James Elder Assistant Professor, Psychology.
Research Associate, Human Performance Laboratory.
Interests: visual psychophysics, computational vision, image coding.

Research Associates

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| Dr. Bob Cheung | Working with I.P. Howard |
| Dr. Reuben Gellman | Working with M. Steinbach |
| Dr. Esther Gonzalez | Working with M. Steinbach |
| Mr. Eric Groen | Working with I.P. Howard |
| Dr. Xiang-Hua Hong | Working with D. Regan |
| Dr. Feng Lu | Working with E. Milios |
| Ms. Heather Jenkin | Working with I.P. Howard |
| Dr. Maureen Reed | Working with M. Steinbach |
| Dr. Marian Regan | Working with D. Regan |
| Dr. Alex Vincent | Working with D. Regan |
| Mr. Jim Zacher | Working with I.P. Howard |

Post Doctoral Fellows

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| Dr. Elizabeth Irving | Working with M. Steinbach |
| Dr. Masahiro Ishii | Working with I.P. Howard |
| Dr. Masayuki Sato | Working with I.P. Howard |

Dr. Makoto Ichikawa
Dr. Shoji Sunaga

Working with H. Ono
Working with P. Kaiser

Graduate students (supervisors)

Robert Allison (Howard)	2nd year Ph.D.
Nicole Aucoin (Jenkin)	2nd year M.Sc.
Jyoti Baid (Milios)	graduated, June 1995
Isabelle Boutet (Rivest)	1st year M.A.
Carol Dengis (Steinbach)	5th year Ph.D.
Andrea Downie (Grasse)	1st year M.A.
Xueping Fang (Howard)	1st year M.Sc.
Tim Field (Ostroff)	3rd year M.Sc.
Rob Gray (Regan)	1st year Ph.D.
Phillip Grove (Ono)	1st year M.A.
Herb Goltz (Steinbach)	5th year Ph.D.
Carl Gruden (Ostroff)	3rd year M.Sc.
Lorraine Gunther (Ono)	3rd year M.A.
Jochen Lang (Jenkin)	2nd year M.Sc.
Denise Henriques (Crawford)	1st year M.A.
Ghee Ho (Stager)	5th year Ph.D.
Avalon Johnson (Jenkin)	2nd year M.Sc.
Peter Mente (Harris)	2nd year M.A.
Ng Siu-Ming (Spetsakis)	3rd year M.Sc.
Randy Penfield(Grasse)	1st year M.A.
Matt Robinson (Jenkin)	2nd year M.Sc.
Michael Smith (Crawford)	1st year M.A.
Jennifer Steeves(Steinbach)	1st year M.A.
Grant Wainman (Ono)	1st year M.A.
Christine Yeomans (Regan)	2nd year Ph.D.
Sun Zuening (Spetsakis)	2nd year M.Sc.

New Graduate Students Arriving in September 1996

Radha Kohly (Regan)	1st year M.A.
Jason Lawrence (Regan)	1st year M.A.
Susanna Yanivker (Grasse)	1st year M.Sc.
Eliana Klier (Crawford)	1st year M.Sc.
Dan Kriechman (Harris)	1st year M.Sc.
Greg Reid (Milios)	1st year M.Sc.
Ken Tam (Jenkin)	1st year M.Sc.
Dan Zikovitz (Harris)	1st year M.Sc.

Visiting Scientists 1995-96

Dr. G. Barnes	Institute of Neurology, University of London, UK
Dr. A. Smith	Dept. of Psychology, Royal Holloway College, Univ. of London, UK
Dr. Kenzo Sakurai	Tohoku Gakuin University, Japan
Dr. Michael Swanston	Dundee University, Scotland
Dr. Terunori Mori	Tamavagwa University, Japan
Dr. Mitsuho Yamada	NHK Laboratory, Japan
Dr. Kenji Susami	ATR Human Information Processing Research Laboratories, Japan
Dr. Brian Rogers	Oxford University, England
Dr. Nicholas Wade	Dundee University, Scotland
Dr. Byron Pierce	USAF Exchange Scientist, Human Factors Division

Visiting Scientists 1996-97

Dr. Graham Barnes	MRC unit on hearing and balance, University of London, UK
Dr. Andy Smith	Dept. of Psychology, Royal Holloway College, Univ. of London, UK
Dr. Kenzo Sakurai	Tohoku Gakuin University, Japan
Dr. Yuqing Fu	Dept. of Radio Engineering, Southeast University, Nanjing, China
Dr. Koichi Shimono	Tokyo University of Mercantile Marine, Japan
Dr. Hiroyasu Ujike	National Institute of Bioscience and Human Technology, Tsukuba, Japan,
Dr. Terunori Mori	Tamavagwa University, Japan

Awards and Honours

Doug Crawford

Sloan Fellowship.
MRC Scholarship.

Keith Grasse

Membership on NSERC Grant Selection Committee 30 Animal Biology 1995-96.

Michael Jenkin

Vision Interface 96 Program Co-Chair.
Member Vision Interface 97 Program Committee.
Member IEEE Int. Conf. on R & A Technical Committee.
Member IEEE/RSJ Int. Conf. IROS Technical Committee.

Evangelos Milios

Member of the Program Committee of "Sensor Fusion VII", SPIE OE/Symposium, Boston, Nov., 1996.
Member of the Scientific Committee of the 3rd International Workshop on Visual Form, Capri, June, 1997.

David Regan

Editorial Board: Spatial Vision.
Editorial Board: Ophthalmic and Physiological Optics.

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

Expert Witness for and Consultant to the Ontario Human Rights Commission.
Editorial Board, Binocular Vision

E. Lynn Kirshner Memorial Scholarship for 1995

Awarded to Robert Gray for his senior authored paper "Cyclopean Motion Perception Produced by Oscillations of Size, Disparity and Location". *Vision Research*, 35, 655-666.

Research Grants (Annual)

Crawford

MRC operating Grant. Brainstem control of 3-D eye and head movements	69,078
MRC equipment Grant. (same title)	54,162
MRC Scholarship. Neural control of 3-D eye and head movements	50,000
NSERC research Grant. Human eye, head, and arm movements in 3-D space	21,000
Sloan Fellowship	23,777

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 Fellowship	18,000
PRECARN feasibility study with M. Jenkin, Aastra Aerospace and ISTS	32,000
NSERC Industrial Fellowship with M. Jenkin and Aastra Aerospace	52,000

Howard

NSERC Operating Grant. Visual pursuit and induced visual motion	39,000
DCIEM Contract	50,000
DCIEM Contract	40,000
CSA Contract	42,000
Ontario Centre of Excellence Grant with Grasse, Harris, Jenkin, Ono and Regan, HP Lab	439,000

Jenkin

NSERC Operating Grant. Active Stereo	22,000
NSERC Equipment Grant with Milios and Tsotsos	26,000
PRECARN Project with Milios	80,000
NSERC Collaborative Research Grant with L. Harris	68,000

Kaiser

NSERC Operating Grant. Studies in colour vision	29,000
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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
York Incentive Grant with M. Jenkin	4,000

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 ind 3-D space	40,000

Ostroff

NSERC Operating Grant	20,000
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Regan

NSERC/CAE Industrial Chair	132,452
NSERC Operating Grant	71,000
AFOSR Grant	246,622

Rivest

NSERC Operating Grant. Contribution of multiple attributes to localization of contours	13,000
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Spetsakis

NSERC Operating Grant. Visual motion analysis	18,000
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Steinbach

NSERC Operating Grant. Human oculomotor control	31,000
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MRC Operating Grant. Visual function in strabismic and monocularly enucleated children	65,500
MRC Post Doctoral Fellowship - Elizabeth Irving	45,000
Jackman Foundation. Oculomotor Lab at the Eye Research Institute of Canada	35,000
York University Summer Graduate Assistance Program	1,000
York University Sabbatical Leave Fellowship	2,200

Total annual value of grants **\$2,100,691**

Publications July 1995-June 1996

Books

- Howard, I.P and Rogers, B.J. *Binocular Vision and Stereopsis*. Oxford University Press: New York, 1995.
- Jenkin, M. and Harris, L (Eds.). *Computational and Psychophysical Mechanisms of Visual Coding*. Cambridge University Press, 1996, in press.
- Kaiser, P.K. and Boynton, R. M. *Human Color Vision*, Second Edition. Published by the Optical Society of America, 1996.
- Stager, P. US National Academy of Sciences Panel on *Human Factors in Air Traffic Control* has Volume 1 of two volumes, 1996, in press.

Chapters in Books

- Crawford, J.D., Vilis, T. and Guitton, D. 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*. 1996, in press.
- Crawford, J.D. 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*, 1996, in press.
- Grasse, K.L. and Cynader, M.S. The accessory optic system of frontal-eyed animals. In A. Leventhal (Ed.), *Vision and Visual Dysfunction*, Vol. IV, Chap. 5, *The Neuronal Basis of Visual Function*. London: Macmillan, 1995, in press.
- Uhlin, T. and **Jenkin, M.** Real time issues for active vision hardware. In H. Christensen and J. Crowley (Eds.), *Active Vision Hardware*, Kluwer, 1996, in press.
- Coombs, D. and **Jenkin, M.** The geometry of active binocular vision. In H. Christensen and J. Crowley (Eds.), *Active Vision Hardware*, Kluwer, 1996, in press.
- Robinson, M. and **Jenkin, M.** Reactive control of a mobile robot. In C. Archibald and P. Kwok (Eds.), *Vision Research in Computer and Robot*. World Scientific Press: Singapore, 1995, 55-70.
- Ono, H. Aftereffects of Bill Dember in Motion. In R. Hoffman, M. Sherrick and J. Warm (Eds.), *Psychology beyond the threshold (Festschrift)*. American Psychological Association, 1996, in press.
- Ono, H., Sato, T., Shioiri, S. and Ujike, H. An aftereffect of Bill Dember in motion: Probing the signal of motion parallax. In R. Hoffman, M. Sherrick and J. Warm (Eds.), *Psychology beyond the threshold (Festschrift)*. American Psychological Association, 1996, in press.
- Ostroff, J.S. Visual tools for verifying real-time systems. In *Theories and Experiences in Real-Time Systems, AMAST Series in Computing*, Vol. 2. Iowa City: World Scientific Press, 1995, in press.
- Regan, D. Perceptual motor skills and human motion analysis. In G. Salvendy (Ed.), *Handbook Of Human Factors And Ergonomics*, New York: Wiley, 1996, in press.

Papers in Refereed Journals

- Crawford, J.D. and Vilis, T. (1995). How does the brain solve the problems of rotational motion? *The Journal*

- of Motor Behaviour*, 27, 89-99.
- 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 Resesarch*, in press.
- 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, velocity and duration of the vertical drift. *Journal of Pediatric Ophthalmology and Strabismus*, in press.
- Gray, R. and Regan, D. (1996). Cyclopean motion perception produced by oscillations of size, disparity and location. *Vision Research*, 35, 655-666.
- Gray, R. and Regan, D. (1996). Accuracy of reproducing angles: is a right angle special? *Perception*, in press.
- 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.
- Giaschi, D.E., Trope, G.E., Kothe, A.C. and **Hong, X.H.** (1996). Loss of sensitivity to motion-defined form in patients with primary open angle glaucoma and ocular hypertension. *Journal of the Optical Society of America A*, 13, 707-716.

Papers in Refereed Journals cont'd.

- Telford, L., **Howard, I.P.** and Ohmi, M. (1995). Heading judgments during active and passive self motion. *Experimental Brain Research*, 104, 502-510.
- Telford, L., **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*, in press.
- Kaneko, H. and **Howard, I.P.** (1996). Spatial properties of shear disparity processing. *Vision Research*, in press.
- Howard, I. P. and Wade, N. (1996). Ptolemy's contributions to the geometry of binocular vision. *Perception*, in press.
- Howard, I.P. (1996). Interaction within and between the spatial senses. *Journal of Vestibular Research*, in press.
- Dudek, G., **Jenkin, M., Milios, E.,** and Wilkes, D. A. (1996). Taxonomy for Multi-Agent Robotics. *Autonomous Robots*, in press.
- Jenkin, M., Milios, E. and Tsotsos, J. (1996). TRISH: A binocular robot head with torsional eye movements, special issue on mobile robots, robot heads and active vision of the *International Journal of Pattern Recognition and Artificial Intelligence*, in press.
- Deng, X., **Milios, E.** and Mirzaian, A. (1996). Landmark-Based Strategies for Path Execution. *Robotics and Autonomous Systems*, in press.
- Nakamizo, S. and **Ono, H.** (1995). Writing an English article with "style". *The Journal of The Institute of Television Engineers of Japan*, 45 (10), 1373-1377.
- Ono, H., Phillips, K. A. and Leneman, M. (1966). The content of an abstract: de jure and defacto. *American Psychologist*, in press.
- Shimono, K. and **Ono, H.** (1996). Binocular single vision: the limitation of the fusion and suppression theories. *Shinrigaku Hyoron (Japanese Psychological Review)*, in press.
- Portfors-Yeomans, C.V. and Regan, D. (1996). Discrimination of the direction and speed of motion in depth from binocular information alone. *Journal of Experimental Psychology: Human Perception and Performance*, in press.
- Portfors-Yeomans, C.V. and Regan, D. (1996). Cyclopean discrimination thresholds for the direction and speed of motion in depth. *Vision Research*, in press.
- Portfors-Yeomans, C.V. and Regan, D. (1996). 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.

- Reed, M.J., Steeves, J., Kraft, S.P., Gallie, B.L. and Steinbach, M.J. (1996). Contrast sensitivity in strabismic and monocularly enucleated children. *Vision Research*, in press.
- Hamstra, S. J. and **Regan, D.** (1995). Orientation discrimination in cyclopean vision. *Vision Research*, 35, 365-374.
- Regan, D. (1995). Spatial orientation in aviation: Visual contributions. *Journal of Vestibular Research*, 5, 455-471.
- Kruk, R. and **Regan, D.** (1996). Collision avoidance: A helicopter simulator study. *Aviation, Space and Environmental Medicine*, 67, 111-114.
- Regan, D. (1995). Orientation discrimination for texture-defined form. *Perception*, 24, 1131-1138.
- Regan, D., Gray, R. and Hamstra, S.J. (1995). Evidence for a neural mechanism that encodes angles. *Vision Research*, in press.
- Regan, D. and He, P. (1995). Magnetic and electrical brain responses to chromatic contrast in human. *Vision Research*, 36, 1-18.
- Regan, D. and He, P. (1995). Magnetic and electrical responses of the human brain to texture-defined form and to textures. *Journal of Neurophysiology*, 74, 1167-1178.
- Regan, M.P., He, P. and Regan, D. (1995). An audio-visual convergence area in human brain. *Experimental Brain Research*, 105, 485-487.
- Regan M.P. (1995). Half-wave linear rectification of a frequency modulated sinusoid. *Journal of Applied Mathematics and Computation*, in press.

Papers in Refereed Journals cont'd.

- Regan, D., Hajdur, L.V. and Hong, X.H. (1996). Two-dimensional aspect ratio discrimination for shape defined by orientation texture. *Vision Research*, in press.
- Vincent, A. and **Regan, D.** (1996). 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*, in press.
- Rivest, J., Boutet, I. and Intriligator, J. (1996). Perceptual learning of orientation discrimination by more than one attribute. *Vision Research*, in press.
- Rivest, J. and Cavanagh, P. (1996). Localizing contours defined by more than one attribute. *Vision Research*, 36, 53-67.

Published Proceedings

- Dudek, G., **Jenkin, M., Milios, E.** and Wilkes, D. (1995). Exploring graph-like worlds embedded in a metric map. *Proceedings Vision Interface '95*, 195-202.
- Dudek, G., **Jenkin, M., Milios, E.** and Wilkes, D. (1995). Experiments in sensing and communication for robot convoy navigation. *Proceedings IEEE/RSJ IROS*, Vol. 2, 268-273, Pittsburgh, PA.
- Jenkin, M. R. M., Milios, E. E. and Tsotsos, J. K. (1995). Cyclotorsion and the TRISH Active Stereo Head. *Proceedings International Workshop on Stereoscopic and Three Dimensional Imaging IWS3DI '95*, Santorini, Greece, 218-223.
- Baid, J. and **Milios, E.** (1996). Deformed Shape Matching using Multiscale Dynamic Programming. *Vision Interface '96*, Toronto, Ontario, 21-24 May.

Conference Presentations and Abstracts

- Allison, R.S., Howard, I.P. and Zacher, J.E. Dynamic responses of the vertical vergence system. *Investigative Ophthalmology and Visual Science*, 1996, 37, S165.

- Crawford, J.D. Visuomotor codes for three-dimensional saccades. *York University International Conference on Visual Coding*, York University, North York, Ontario, June, 1995.
- Crawford, J.D. and Guitton, D. Motor adaptation of 2-D and 3-D aspects of eye-head coordination in monkeys. *Society of Neuroscience Abstract*, 21, 1271, 1995.
- Dengis, C.A., Gunther, L.N., Steinbach, M.J. and Ono, H. Ability to wink voluntarily in normal and strabismic children. *Investigative Ophthalmology and Visual Science*, 1996, 37, S941.
- Goltz, H.C., Irving, E.L., Steinbach, M.J. and Eizenman, M. How is vertical eye position control in darkness affected by eye-in-orbit position and body orientation changes. *International Conference on Visual Coding*, York University, North York, Ontario, 1995.
- Goltz, H.C., Irving, E.L., Steinbach, M.J. and Eizenman, M. Vertical eye position control in darkness: Effects of eye-in-orbit position and body orientation. *Annual Department of Ophthalmology Research Day Meeting*, University of Toronto, Toronto, Ontario, 1995.
- Goltz, H.C., Cheung, B.S.K., Steinbach, M.J. and Eizenman, M. Eye position control under sustained +3Gz hypergravity. *Investigative Ophthalmology and Visual Science*, 1996, 37, S276.
- Gonzalez, E.G., Steinbach, M.J., Ono, H., Gallie, B.L. and Kraft, S. Localization of head landmarks in monocular and binocular observers. *Investigative Ophthalmology and Visual Science*, 1996, 37, S290.
- Gray, R. and Regan, D. Estimates of time to collision based on binocular and monocular visual information. *Investigative Ophthalmology and Visual Science*, 1996, 37, S652.
- Gunther, L.N., Ono, H., Dengis, C.A. and Steinbach, M.J. Apparent concomitant motion resulting from translational and rotational head movement. *Investigative Ophthalmology and Visual Science*, 1996, 37, S714.
- Harris L.R. and Mente, P. Shifting the axis of rotation of the vestibulo-ocular reflex in cats. *Neuroscience Abstracts*, 1995, 21 60.11.
- Harris, L.R. and Jenkin, M. Comparing judgements of linear displacement using visual and vestibular cues. *Investigative Ophthalmology and Visual Science*, 1996, 37, S518.
- Ichikawa, M., Ono, H., Nishida, S. and Sato, T. Depth perception from second order motion yoked to head movement. *Investigative Ophthalmology and Visual Science*, 1996, 37, S746.
- Lang, J. and **Jenkin, M.** Active sensing with VIRTUE. *Vision Interface'96*, Toronto, Ontario.
- Jenkin, M., Wilkes, D. and Tsotsos, J.K. Control strategies for ARK, an autonomous robot for a known environment. *IASTED International Conference on Applications of Control and Robotics*, Orlando, FL., 1996, 193-196.

Conference Presentations and Abstracts cont'd.

- Aucoin, N., Sandbekkhaug, O. and **Jenkin, M.** An immersive 3D user interface for mobile robot control. *IASTED International Conference on Applications of Control and Robotics*, Orlando, FL., 1-4, 1996.
- Wilkes, D., Bains, N., Bruce, J., Campbell, T., Jasiobedzki, P., **Jenkin, M.**, Jepson, A., Majarais, B., Milios, E., Mohindra, A., Nickerson, S.B., Scott, M., Service, J., Terzopoulos, D. and Tsotsos, J. ARK-2: A mobile robot that navigates autonomously in an industrial environment. *DND/CSA Workshop on Robotics and Knowledge Based Systems*, October, 1995.
- Jenkin, M.R.M. Active vision on ARK-lite. Invited Paper, *1st World Congress on Intelligent Manufacturing*, Mayaguez, Puerto Rico, 650-659, 1995.
- Pierce, B.J. and Howard, I.P. Orientation and the perception of depth contrast in slanted and inclined surfaces. *Investigative Ophthalmology and Visual Science*, 1996, 37, S288.
- Portfors-Yeomans, C.V. and Regan, D. (1996). Speed discrimination of cyclopean motion in depth. *Investigative Ophthalmology and Visual Science*, 37, S685.
- Regan, D., Hajdur, L.V. and Hong, X.H. Orientation discrimination and aspect ratio discrimination for texture-defined form. *Investigative Ophthalmology and Visual Science*, 1996, 37, S293.
- Tsotsos, J. and **Milios, E.** Selective Attention within a Visual Processing Pyramid. *1995 IEEE Workshop on Nonlinear Signal and Image Processing*, Neos Marmaras, Halk, June 20-22.

- Lu, F. and **Milios, E.** Optimal Global Pose Estimation for Consistent Sensor Data Registration. *IEEE International Conference on Robotics and Automation*, Nagoya, Japan, 1995.
- Prassler, E. and **Milios, E.** Position estimation using equidistance lines. *IEEE International Conference on Robotics and Automation*, Nagoya, Japan, 1995.
- Ono, H. The waterfall impact: Tribute to Bill Dember. *Conference (Festschrift) for William N. Dember*, Cincinnati, Ohio, 1996.
- Ono, H., Sato, T., Shioiri, S. and Ujike, H. An impact of the waterfall: Probing the motion signal for motion parallax. *Conference (Festschrift) for William N. Dember*, Cincinnati, Ohio, 1996.
- Regan, D. Applying psychophysical research to the design of stereo flight simulators. *TORON-NIHON Workshop on Virtual Reality*, Toronto.
- Rivest, J., Mitchell, T. and Intriligator, J. Perceptual learning in the visual and auditory systems with and without attention. *Investigative Ophthalmology and Visual Science*, 1996, 37, S180.
- Boutet, I., **Rivest, J.** and Intriligator, J. The role of attention on motion, color and luminance aftereffects. *Investigative Ophthalmology and Visual Science*, 1996, 37, S528.
- Boutet, I., **Rivest, J.** and Intriligator, J. La discrimination de l'orientation travers différents attributs. *Societe Quebecoise de recherche en psychologie, XVIII^eme congrès*, Ottawa, 1995.
- Rivest, J., Boutet, I. and Intriligator, J. Perceptual learning of orientation discrimination across attributes. *International Conference on Visual Coding*. York University, North York, Ontario, 1995.
- Boutet, I., Intriligator, J. and **Rivest, J.** The influence of attention on visual learning. *International Conference on Visual Coding*, York University, North York, Ontario, 1995.
- Steeves, J.K.E., Reed, M.J., Gallie, B.L., Kraft, S.P. and Steinbach, M.J. Contrast letter acuity is enhanced in the remaining eye of enucleates and depressed in the non-deviating eye of early-onset strabismics. *International Conference on Visual Coding*, York University, North York, Ontario, 1995.
- Steeves, J.K.E., Reed, M.J., Kraft, S.P. and Steinbach, M.J. Interocular comparison of monocular OKN in early and late-onset strabismic subjects. *Investigative Ophthalmology and Visual Science*, 1996, 37, S276.
- Steinbach, M.J., Goltz, H.C., Irving, E.L. and Kraft, S.P. Dissociated vertical deviation. *Jampolsky Fellows Meeting*, Napa Valley, California, 1995.
- Irving, E.L., Goltz, H.C., Kraft, S.P. and Steinbach, M.J. Saccadic adaptations following adjustable suture strabismus surgery. *Investigative Ophthalmology and Visual Science*, 1996, 37, S490.
- Steinbach, M.J., Goltz, H.C., Irving, E.L. and Kraft, S.P. Dissociated vertical deviation is affected by head and body orientation. *Investigative Ophthalmology and Visual Science*, 1996, 37, S440.
- Zacher, J.E., Allison, R.S. and Howard, I.P. Effects of visual illusions on eye movements. *Investigative Ophthalmology and Visual Science*, 1996, 37, S524.

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 Ont., on Neurophysiology of eye movements.

Dr. Daniel Guitton, Montreal Neurological Institute, on 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. (with Good Vibrations Inc.) The development of Auditory and Vestibular Feedback Signals for Robotic Control.

Ian P. Howard

Co-author with Dr. Brian Rogers of Oxford University, book on Binocular Vision and Stereopsis.
 Collaboration with Dr. Ron Kruk of CAE on visual factors in flight simulators.
 Co-investigator with Dr. C. Oman of MIT on the space shuttle Neurolab mission.
 Collaboration with Dr. B. Cheung of DCIEM on orientation in flight simulators.

Evangelos Milios

G. Dudek, Dept. of Computer Science, McGill University.
 D. Wilkes, Ontario Hydro Technologies, on Swarm robotics.
 E. Prassler, FAW, University of Ulm, Germany, on Dynamic Mobile robot navigation using distributed representations.
 J. Tsotsos, Dept. of Computer Science, Univ. of Toronto, on Architectures for Auditory attention.

Hiroshi Ono

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

David Regan

Dr. R. Kruk (CAE) on visual factors in aviation and flight simulator design.
 Dr. L. Reid (Institute of Aerospace Science and Engineering, Univ. of Toronto) on flight simulators.

Josée Rivest

James Intriligator at Harvard University on perceptual learning experiments.

Martin Steinbach

Professor Iain Donaldson, University of Edinburgh.

Colloquia

Doug Crawford

York Vision Group, York University, Sept., 1995
 Dept. Psychology, University of Toronto, Feb., 1996
 Dept. Physiology, University of Minnesota, March, 1996

Laurence Harris

Dept. of Psychology, University of Waterloo, May, 1996
 Centre for Visual Sciences, University of Rochester, 1996

Hiroshi Ono

Smith Kettlewell Eye Institute, October, 1995

David Regan

University of Alabama, April, 1996

Martin Steinbach

Eye Research Institute of Canada, 1995
 Hospital for Sick Children, Toronto - Ophthalmology Rounds, 1995
 Centre for Vision Research, York University, 1995
 Department of Ophthalmology, University of Toronto, 1995
 School of Optometry, University of Waterloo, 1996
 School of Optometry, State University of New York, 1996

York Conference

An International Conference on Vision in Action will be held at York University in June 24 - 28, 1997.

Centre for Vision Research Lecture Series - 1995/96

Brian Rogers	Oxford, UK.	Binocular disparity and the induced effect
D. Martin Regan	York U.	Visual and auditory phenomena
Denis Phillips	Dalhousie	Rethinking frequency maps in primary auditory cortex
Demetri Terzopoulos	U. of T.	Artificial Life
Doug Crawford	York U.	3D eye-movement control
Hiroshi Ono	York U.	Parallax and depth vision
Michael Jenkin	York U.	Stereo vision in robotics
Peter Kaiser	York U.	Colour Vision
Greg Recanzone	U. Cal. Davis	Attentional modulation of MT and MST neurons in the Macaque
Philip Servos	Stanford	Visual and visuomotor estimates of distance
Stuart Marlin	Queens U.	Visual motion processing for object segregation
Doug Tweed	Western	Stereovision and binocular coordination in three dimensions
Tom Heckmann	GM	Visual detection
Joshua Solomon	London, UK.	Visual channel for letter identification
Farely Norman	Ohio State	Visual Representation of 3-D Form
Laurie Wilcox	Montreal	Alternate views of stereopsis
Laurence Harris	York U.	The neural control of movement
James Elder	NEC Institute	In defense of the contour code
A.J. Van Opstal	Cath. Univ, Nether.	Three-, rather than two-dimensional burst generation for voluntary saccadic eye movements.

