

Francis K.H. Quek

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EDUCATION

- 1985 – 1990 **The University of Michigan, Ann Arbor**
Ph.D. in Computer Science in Engineering. (Ph.D. Thesis: *On Three-Dimensional Object Recognition and Pose Determination: An Abstraction Based Approach*, Advisor: Professor Ramesh Jain)
- 1983 – 1984 **The University of Michigan, Ann Arbor**
M.S.E in Electrical Engineering. (M.S.E. Thesis: *A Decision System for Autonomous Robot Navigation*)
- 1982 – 1984 **The University of Michigan, Ann Arbor**
B.S.E in Electrical Engineering (*summa cum laude*).
- 1975 – 1978 **Singapore Polytechnic (Singapore)**
Diploma in Electronics and Communication Engineering.

RESEARCH INTERESTS

Human-computer interaction as it relates to computer vision: This includes collaborative technologies to support cooperative work, shared perception systems where machines serve to offload human perceptual load with proactive visual processing, the recognition and tracking of head and hand gestures for man-machine interaction, gesture, gaze and voice multi-modal interfaces, and video/multimedia database access.

BioMedical imaging: Research area includes the analysis and visualization of two and three-dimensional medical images such as X-ray angiograms, magnetic resonance images and computed tomography images.

Computer vision: Special interest is placed in three-dimensional object recognition and pose determination, video data analysis, and document image analysis.

Robot navigation: Research area encompasses vision and planning systems for mobile robots.

TEACHING INTERESTS

Teaching interests include both lower level computer science/engineering courses and higher level/graduate courses. Particular areas of teaching interest include computer vision, artificial intelligence, robot navigation, human-machine interaction, computer graphics, computer ethics, and object oriented design and programming.

WORK EXPERIENCE

- June 1993
– Present
- Assistant Professor:**
- Dept. of Electrical Engr. & Computer Sc., U. of Illinois, Chicago
Teaching graduate and undergraduate classes in Computer Vision, Graphics, Human-Computer Interaction, Object-Oriented Programming, Programming Languages, and Data Structures. Performing research in Computer Vision and Interaction Systems (see Next). Responsibilities include grant writing, program planning, project management, and supervision of student research.
- June 1993
– Present
- Director:**
- Vision Interfaces and Systems Laboratory (VISLab), UIC
Established and directs the VISLab in research that include human interfaces using gesture, gaze and voice, interfaces and video analysis for multi-media database access, rule-mitigated collaboration technology, medical imaging (brain image analysis, segmentation and registration) and attentionally-based interaction for human-computer interaction. The VISLab comprises 2 faculty, 16 graduate student researchers. VISLab resources include 7 SGI workstations (including a 4×R10000 ONYX, and an Octane 2×R10000), 2 Sun-SPARCstations, a suite of Macintoshes, an NT-PC and a suite of cameras and scanners.
- June 1990
– May 1993
- Assistant Research Scientist:**
Visiting Research Investigator: (June 1989 – May 1990)
- Dept. of Electrical Engr. & Computer Sc., U. of Michigan
Performing research in Artificial Intelligence as it pertains to Advanced User Interfaces, Man-machine Shared Perception, Surface Modeling, Range Image Segmentation, Computer Vision, Image Processing, and Robot Navigation. Ongoing areas of research include the interpretation of laser range data, human interfaces using gesture and voice for multi-modal input, and human-machine perceptual cooperation for document image analysis and robot control. Responsibilities include grant writing, program planning, industrial liasons, project management, and supervision of graduate/undergraduate student research. Teaching: Co-taught a classes in knowledge-based robot navigation and computer vision, served as faculty advisor for a NASA sponsored design class on remotely piloted vehicles, and advised several independent studies.
- May 1985
– May 1989
- Research Assistant:**
- Dept. of Electrical Engr. & Computer Sc., U. of Michigan
Performing research in Artificial Intelligence as it pertains to Robot Navigation, Cartography for a Roving Robot, Computer Vision, Image Processing, Geometric Modeling, Robot Planning, Optical Character Recognition for handwritten ZIP codes, Neural/Adaptive Networks, and Biological Neural Modeling and Simulation. Responsibilities included program planning and multi-institute coordination of technical work for the *NASA Center for Autonomous and Man-Controlled Robotics and Sensing Systems* and project management. *This is a fellowship position on a grant from the Environmental Research Institute of Michigan.*

- June 1984
– April 1985
- Research & Development Engineer:**
- **Hewlett-Packard (Singapore).**
Responsibilities included overseeing and directing prototype production of a new keyboard, evaluation of new technologies and their feasibility for new products, concept and lab. prototype development of a new cursor control device and digitizing tablet, investigation of technologies for optical character input/recognition in the context of desk-top publishing, design and implementation of a customer survey comparing ergonomic preferences for different keyboards, and software development for the *HP Vectra* keyboard. Other work included the setting up of the R&D library and the teaching of two courses on structured programming to company engineers.
- Spring 1984
- Research Assistant:**
- **Environmental Research Institute of Michigan**
Performed research in the field of Robot Navigation. The system developed managed a dynamic mapping structure for a roving robot, performed all navigation functions, utilized a special purpose image processor capable of mathematical morphology and culminated in a Master's Thesis.
- Winter 1984
- Teaching Assistant:**
- **Dept. of Electrical Engr. & Computer Sc., U. of Michigan**
Conducted tutorial sessions, held office hours, assigned and graded programming assignments for a course in Structured Programming in Pascal.
- Jan. 1981
– Oct. 1981
- Lecturer:**
- **Lek Meng Professional Training Center (Singapore)**
Prepared students for the City and Guild of London Technician Diploma examinations in Electrical Engineering.
- July 1978
– Jan. 1981
- Communications Technician:**
- **Singapore Armed Forces (Singapore)**
Duties involved the repair and maintenance of all electronic and communications equipment at an armoured battalion. Won an award from the forces and a commendation from the commanding officer for inventing a device to test armoured electronics. *This position was in fulfillment of the mandatory national service in Singapore.*

PATENTS

- 1997
- Quek, F., "Content-Based Video Access System", Provisional US Patent, No. 60/053,353 filed on 07/22/1997. PCT application Serial No. PCT/US98/15063 filed on 07/22/1998. UIC file number: CQ037.
- 1998
- Quek, F., "Cerebral Circulation Model and Applications", US provisional patent application Serial No. 60/073,580 filed on 02/03/1998 US patent application Serial No. 09/243,870 filed on 02/03/1999 PCT application Serial No. PCT/US99/75111 filed on 02/03/1999 UIC file number: CR04.

PUBLICATIONS

Book Chapters & Journal Articles

- 1989 Alkon, D. L., Quek, F., and Vogl, T. P., "Computer modeling of associative learning", in *Advances in Neural Information Processing Systems I*, D. Touretzky (ed.), pp. 419–435, Morgan Kaufmann Publishers, San Mateo CA, 1989.
- 1992 Jain, R., Besl, P. and Quek, F., "Range data analysis," in *Encyclopedia of Artificial Intelligence, Second Edition*, Shapiro, Stuart C. Ed. Wiley-Interscience, John Wiley & Sons, Inc., New York, pp. 1250–1265.
- 1993 Quek, F., Jain, R., and Weymouth, T.E., "An abstraction-based approach to 3D Pose Determination from Range Images," *IEEE Transactions on Pattern Recognition and Machine Intelligence*, vol. PAMI-15, no. 7, pp. 722-736, July 1993..
- Aug. 1995 Quek, F., "Eyes in the Interface," *International Journal of Image and Vision Computing*, Vol.13, Number 6, August, 1995, pp. 511–525.
- Winter 1996 Quek, F., "Unencumbered Gestural Interaction," *IEEE Multimedia*, Vol. 4, No. 3, Winter 1996, pp. 36–47.
- 1998 Charbel, F., Shi, J., Quek, F. Zhao, M., and Misra, M., "Neurovascular flow simulation review," *Neurological Research*, Vol 20, No. 2, March 1998, pp. 107115.
- 1998 Zhao, M., and Quek, F., "RIEVL: Recursive induction learning in hand gesture recognition," *IEEE Transactions on Pattern Recognition and Machine Intelligence (PAMI)*, Vol. 20, No. 11, November 1998, pp. 1174–1185.
- 1998 Quek, F., "An algorithm for the rapid computation of boundaries in run length encoded regions," Accepted, in press: *Pattern Recognition Journal*.
- 1998 Quek, F., Kirbas, C. and Charbel, F., "AIM: Attentionally-based interaction model for the interpretation of vascular angiography," Accepted, in press: *IEEE Transactions in Information Technology in Biomedicine*.
- 1999 Quek, F., Bryll, R., and Ma, X., "Content-Based Video Access," Submitted to *ACM Multimedia Systems Journal*.
- 1999 Quek, F., Bryll, R., and Ma, X, "Vector Coherence Mapping: A parallel algorithm for image flow computation with fuzzy combination of multiple constraints," Submitted to *IEEE Transactions on Pattern Recognition and Machine Intelligence (PAMI)*.

- 1999 Quek, F., Bryll, R., Arslan, H., Kirbas, C., and McNeill, D., “A multimedia database system for temporally situated perceptual psycholinguistic analysis,” submitted (04/1999) to *Multimedia Tools and Applications*, Kluwer Academic Publishers, 1999.
- 1999 Quek, F., and Gong, X., “Extraction of vascular trees: A wave propagation approach,” In preparation, to be submitted to *IEEE Transactions on Medical Imaging*.
- 1999 Quek, F., McNeill, D., Ansari, R., Ma, X., Bryll, B., Duncan, S., and McCullough, K-E, “Gesture and speech cues for conversational interaction in monocular Video,” in preparation, to be submitted to *International Journal of Human Computer Interaction*, 1999.
- 1999 Quek, F., Kirbas, C., and Gong, X., “A review of vessel extraction techniques and algorithms,” In preparation, to be submitted to *ACM Computing Surveys*.

Theses

- July 1984 F. Quek, **A Decision System For Autonomous Robot Navigation**, *M.S.E. Thesis*, Department of Electrical Engineering and Computer Science, The University of Michigan, Ann Arbor, July 1984.
- March 1990 Quek, F., **On Three-Dimensional Object Recognition and Pose Determination: An Abstraction Based Approach**, *Ph.D. Thesis*, Department of Electrical Engineering and Computer Science, The University of Michigan, Ann Arbor, March 1990.

Keynote Addresses

- Oct. 1995 Quek, F., “Non-Verbal Vision-Based Interfaces,” Keynote Speech, *International Workshop in Human Interface Technology '95, IWHIT'95*, October 12-13, Aizuwakamatsu, Fukushima, Japan.

Refereed Conferences/Workshops

- September 1985 Quek, F., Franklin, R., and Pont, F., “A decision system for autonomous robot navigation”, *SPIE Conference on Intelligent Robots and Computer Vision*, Vol. 579, pp. 377-388, #59-50, September 1985.
- December 1988 Alkon, D. L., Quek, F., and Vogl, T. P., “Computer modeling of associative learning”, *IEEE Conference on Neural Information Processing Systems – Natural and Synthetic*, Poster Session presentation, December 1, 1988.

- November 1988 Quek, F., Jain, R., and Mitchell, B., "Tele-Perception", *SPIE Conference on Space Station Automation IV*, Vol. 1006, pp. 152-162, #1006-19, November 7-9, 1988.
- June 1991 Shu, C-F., Jain, R., and Quek, F., "A linear algorithm for computing phase portraits of oriented textures," *Proc. of the IEEE Conf. on Computer Vision and Pattern Recognition*, pp. 352-357, June 2-6.
- November 1992 Quek, F., and Petro, M., "Interactive map conversion: Combining machine vision and human input," in *Proceedings of the IEEE Workshop on Applications of Computer Vision*, Palm Springs, CA., pp. 255-264, Nov. 30-Dec. 2 1992.
- July 1993 Goshtasby, A. and Quek, F., "Using Gaussians in image filtering and data approximation," *IMACS World Congress*, Atlanta, Georgia, July 4-8, Vol. 1, pp. 193-195, 1993.
- Sept. 1993 Quek, F., "Vision-Based Gesture Interpretation," *Virtual Reality Fall 1993 Conference*, New York, September 1993.
- March 1993 Quek, F., "Hand gesture interface for human-machine interaction," in *Proceedings of the Virtual Reality'93 Conference*, New York, 15-17, March 1993, pp. 13-19.
- April 1993 Quek, F., and Petro, M., "Human-Machine Perceptual Cooperation," *Proceedings of the International Conference on Computer-Human Interaction INTERCHI'93: Human Factors in Computing Systems*, pp. 123-130, Amsterdam, The Netherlands, 24-29, April 1993.
- Aug. 1994 Quek, F., "Toward a Vision-Based Hand Gesture Interface," *Proceedings of the Virtual Reality System Technology Conference*, Singapore, August 23-26, 1994, pp. 17-29.
- June 1995 Quek, F., Mysliwicz, T., and Zhao, M., "FingerMouse: A Freehand Pointing Interface," in *Proceedings of the International Workshop on Automatic Face and Gesture-Recognition*, Zurich, Switzerland, June 26-28, 1995, pp. 372-377.
- Oct. 1996 Quek, F., and Zhao, M., "Inductive Learning in Hand Pose Recognition," *Second International Conference on Automatic Face and Gesture Recognition*, Killington, Vermont, 14-16, October, 1996, pp 78-83.
- 1997 Chang C.K., Quek, F., Cai, L., Kim, S., and Kunzmann-Combelles, A., "A research on Collaboration Net," *International Conference on Software Engineering*, Morocco, Tunisia, 1997, pp. 228-233.

- 1997 Quek F., and Bryll, R., “Vector Coherence Mapping: A parallelizable approach to image flow computation,” *Proceedings of the Asian Conference on Computer Vision, Vol. 2*, Hong Kong, January, 1998, pp. 591–598.
- 1998 Chang, C.K., Cai, L., and Quek, F., “On formal meetings for net-centric web-based computing,” *Proceedings of the International Symposium for Internet Technology*, ISIT’98, April, 1998, pp. 35–40.
- 1999 Quek, F., McNeill, D., Ansari, R., Ma, X., Bryll, B., Duncan, S., McCullough, K-E., Kirbas, C., “Gesture cues for conversational interaction in monocular video,” Submitted to the *ICCV’99 International Workshop on Recognition, Analysis, and Tracking of Faces and Gestures in Real-Time Systems*, Corfu, Greece, 26–27 September, 1999.
- 1999 Quek, F., Ma, X., Bryll, B., “A parallel algorithm for dynamic gesture tracking,” Submitted to the *ICCV’99 International Workshop on Recognition, Analysis, and Tracking of Faces and Gestures in Real-Time Systems*, Corfu, Greece, 26–27 September, 1999.
- 1999 Ansari, R., Dai, Y., Lou, J., McNeill, D., and Quek, F., “Representation of Prosodic Structure in Speech using Nonlinear Methods,” *Proc. Of IEEE Workshop on Nonlinear Signal Processing*, Antalya, Turkey, June, 1999.
- 1999 Quek, F., McNeill, D., R. Ansari, Ma, X., Bryll, B., Duncan, S., McCullough, K-E., and Kirbas, C., “Gesture cues for conversational interaction in monocular video,” submitted to *Int. Wksp on Rec., Anal. and Tracking of Faces and Gestures in R.T. Sys.*, Corfu, Greece, Sep.26-27 1999.
- 1999 Quek, F., Ma, X., and Bryll, R., “A parallel algorithm for dynamic gesture tracking,” submitted to *Int. Wksp on Rec., Anal. and Tracking of Faces and Gestures in R.T. Sys.*, Corfu, Greece, Sep.26-27 1999.
- 1999 Zarit, B.D., Super, B.J., and Quek, F.K.H., “Comparison of Five Color Models in Skin Pixel Classification,” Submitted to the *International Workshop on Recognition, Analysis, and Tracking of Faces and Gestures in Real-Time Systems (RATFG-RTS’99)*, Corfu, Greece, September 26-27, 1999.

Reports

- October 1988 Jacobus, C., Mitchell, B., Na, A., Quek, F., and Riggs, A. J., “Review of sensing requirements and technology alternatives for an orbital servicer application”, *CAMRSS Final Report prepared for Fairchild Space Company for submission to Goddard Space Flight Center, NASA*, 205400-3-F CAMRSS-88-098, October 1988.

June 1995 Zhao, M, and Quek, F., "RBI: A Rule-Based Induction Approach and Its Application in Hand Pose Recognition," VISLab. Technical Report, VISLab-95-001, June 1995.

PANELS

1988 National Science Foundation Range Image Understanding Workshop, NSF Grant No. IRI-8713775.

1993–1996 National Science Foundation panels for Small Business Innovative Research (Interactive Systems Program) proposal evaluation. Presence on particular panels are confidential.

1996 National Science Foundation site visit panel for Cornell University (CISE Infrastructure Program), March, 1996.

1997 National Science Foundation Workshop on Human Centered Computing, Wilmington, Delaware, May 21–23, 1997.

GRADUATE STUDENTS SUPERVISED

Ph.D. in Progress

- Hasan Arslan**, Completed qualifiers Fall 1997, Research Area: Volume Visualization of Medical Images.
- Robert Bryll**, Completed qualifiers Fall 1997, Research area Dynamic Vision and Video Databases.
- Jun Fang**, Completed qualifiers Fall 1998, Research area Detection and Recognition of Human Eye Gaze.
- Xiao-Yun Gong**, Completed qualifiers Spring 1999. Research area Brain Image Registration.
- Cemil Kirbas**, Completed qualifiers Fall 1998. Research area Attention-based Interactive Model for Neurovascular Extraction.
- Xin-Feng Ma**, Completed qualifiers Fall 1997, Research area: Dynamic Vision and Gesture Interpretation.
- Jian-Jun Shi**, Completed qualifiers Spring 1998. Research area Human Hand Gesture Segmentation.
- Alexei Vorontsov**, Research Area: Formal Modeling of Human Meeting Protocols and Collaborative Systems.

M.S. Thesis Completed

- Yong Cho**, "The Architecture and Design of Collaborative Distributed Environment (CoDE)" Spring 1997.
- Yong Mu**, "Agent Management Technology in a Rule-Based Electronic Collaboration System" Spring 1997.
- Robert Bryll**, "A Practical Video Database System," Fall 1997. Student is continuing toward a Ph.D.
- Donglei Yuan**, "Reconstruction and Visualization of 3D Brain Images Through Object-Based Interpolation," Fall 1997
- Joytsna Gummaraju**, Motorola, "Network-Based Collaboration for Software Requirements Specification," Summer, 1998
- Joseph Saltiel**, "Software Visualization in a Collaborative Environment," Summer 1998
- Alexei Vorontsov**, "Rules-Based Distributed Asynchronous Collaborative Environment," Summer 1998. Student is continuing toward a Ph.D.

Benjamin Zarit, “Skin Detection in Video Images,” Spring 1999.

**M.S. Thesis
in Progress**

Scott Bolton, Motorola, Thesis Area: Parallel Stereo Vision.

Dahr Desai, Thesis Area: Video Scene Change Detection Using MPEG Compensation Vector Information.

Richard Yarger, Thesis Area: Extended Gaussian Images in Brain Image Registration

**M.S. Project
Completed**

Thomas Mysliwicz, “FingerMouse: A Freehand Pointing Device,” Fall 1994.

Chewan Mak, “Road Sign Recognition,” Fall 1995.

Ming Zhou, “Vector Coherence Maps in Camera Motion Detection,” Spring 1996.

Ed Machado, “3D Graphics Programming Using OOP,” Spring 1996.

Meide Zhao, “RBI: Rule-based Induction Approach and its Application in Hand Pose Recognition,” Spring 1996.

Ying Shi, “A Muscle-based Realistic Model for Three Dimensional Facial Animation,” Spring 1996.

Pratima Netti, “Visible Human Project: Image Processing and 3D Modeling,” Summer 1996.

Troy Tweiten, Motorola, “Distributed Objects: CORBA and DCOM,” Fall 1997.

Marwan Ansari, “Volumetric Visualization of 3D Medical Data.” Fall 1998.

PROFESSIONAL

SOCIETIES Member, IEEE, and Member, ACM

GRANTS

1988-1990 Quek, F. (P.I.), “Tele-Perception,” Center for Automation and Man-Controlled Robotic and Sensing Systems (CAMRSS) NASA CCDS, Subgrant No. ERIM-SC-205400-8, \$97,264.00, Period: 1 August 1988 – 30 September 1990.

- 1991–1993 Quek, F. (P.I.), “Human-Machine Perceptual Cooperation in Map Conversion,” Space Automation and Robotics Center (SpARC) NASA CCDS, Subgrant No. 33747SC, \$300,000.00, Period: 1 November 1991 – 31 May 1993.
- 1992–1995 Quek, F. (P.I.), and R. Jain Co-PI. “A gesture interpretation and voice recognition multi-modal human machine interface,” National Science Foundation, IRI-9396329, \$454,604.00, Period: 1 July 1992 – 30 July 1995. Credit: Full Sum.
- 1996 Quek, F. (P.I.) “Realtime Computation for Visual Gesture Interpretation,” Equipment Augmentation to Grant IRI-9396429, P.I. F. Quek, National Science Foundation, \$32,000.
- 1995–1996 Poulikakos, D. (Mechanical Engineering – PI), Quek F. (Co-PI), “Holographic Techniques for Measurement and Visualization in Liquid Propellant Atomization,” AFOSR, \$249,269, Period: June 1, 1995 – June 30, 1996. Credit \$83,089.
- 1996–1998 Carl Chang (PI), Quek (Co-PI), “Visualization for Software Engineering and Video-on-Demand,” Fujitsu Network Corp. (USA), \$483,000, Period: August 15, 1996 August 14, 1998. Credit \$123,847.
- 1997–2000 Quek, F. (P.I.), Ansari, R. and McNeill (Co-PI), “Gesture, Speech and Gaze in Discourse Management,” National Science Foundation, \$748,377, Period: March 1, 1997 February 28, 2000. Credit \$374,188.50. NSF-IRI-9618887.
- 1997–2000 Quek, F. (P.I.), Charbel, F. (Co. I.), “Extraction and Registration of the Neurovascular Scaffold in Multimodal Images,” *Whitaker Foundation*, Period: 3 Years Upon Funding, \$200,074. Credit: \$177,574.
- 1998–2003 DeFanti (P.I.), T., Quek, F. , Brown, M., Banerjee, P., Buy, U., Drayton, R., Grossman, G., Johnson, A., Kenyon, R., Ye, N., and Moher, T. “CAVERN – The CAVE Research,” National Science Foundation, Period: September 1, 1998 – August 31, 2003, \$2,000,000. NSF-EIA-9802090. Credit: \$250,000.
- 1998 Quek, F. (P.I.), Rashid Ansari (EECS, UIC), David McNeill (Psych/Linguistics, U. Chicago), Susan Duncan (Psychology, U. Chicago), Melanie Brandabur (Neurology, UIC), Mary Harper (ECE Purdue U.), John Haviland (Linguistics, Reed College), Leah Jamieson (ECE Purdue U.), Susan McRoy (U Wisconsin, Milwaukee), Ovid Tzeng (Laboratory for Cognitive Neuro-Psychology, National Yang-Ming U., Taiwan), “Cross-Modal Analysis of Signal and Sense: Multimedia Corpora and Computational Tools for Gesture, Speech, and Gaze Research,” National Science Foundation, Knowledge and Distributed Intelligence Program, Pre-Proposal Submitted. Full-Proposal pending pre-proposal evaluation. Budget: \$3,000,000.

Seminars and Colloquia

Department Distinguished Lectures

1. Distinguished Lecture on “Gesture, Speech, and Gaze in Discourse Segmentation,” Computer Science Department, Wright State University, OH, October 23, 1997.

Seminars Presented to Industry

1. Seminar on “Advanced Human-Computer Interaction,” presented to NTT, Japan, AM on Feb 6, 1996.
2. Seminar on “Advanced Human-Computer Interaction,” presented to NEC, Japan, PM on Feb 6, 1996.
3. Seminar on “Advanced Human-Computer Interaction,” presented to Institute for Social Information Science, Fujitsu Laboratories Ltd., Japan, Feb 7, 1996.
4. Seminar on “Content-Based Video Access,” presented to Fujitsu Telecom, Japan, Feb 8, 1996.
5. Seminar on “Interactive Content-Based Video Access,” presented to Fujitsu Telecom, Japan, AM on July 25, 1997.
6. Seminar on “Collaborative Technology,” presented to Fujitsu Telecom, Japan, PM on July 25, 1997.
7. Seminar on “Computer-Assisted Neurovascular Surgery,” presented to NTT Yokosuka Laboratories, April 27, 1998
8. Seminar on “Collaborative Software Engineering,” presented to Fujitsu Limited at Kawasaki on April 28, 1998
9. Seminar on “Visualization in Functional Brain Images,” presented to Institute of Advanced Telecommunications Research, Japan, on May 21, 1998

Seminars Presented to Academic Gatherings

1. Seminar on “Interactive Content-Based Video Access,” presented to Hiroshima University, Japan, July 31, 1997.
2. Seminar on “Interactive Content-Based Video Access,” presented to Tianjin University, P.R. China, August 4, 1997.
3. Seminar on “Vision-Based Interaction using Human Hand Gestures,” presented to Tsinghua University, P.R. China, August 6, 1997.
4. Seminar on “Interactive Content-Based Video Access,” presented to Beijing University, P.R. China, August 8, 1997.
5. Seminar on “Interactive Content-Based Video Access,” presented to Harbin Institute of Technology, P.R. China, August 11, 1997.

6. Seminar on “CANVAS Research Presentation,” presented to UIC Vice Chancellors for Research, Academic Affairs, and Health Services, Deans of Engineering and the Medical School, Heads of EECS, Neurosurgery, and Bioengineering, and Director of the Magnetic Resonance Imaging Center, November 24, 1997.
7. Seminar on “Content-Based Video Access,” presented to Kent Ridge Digital Laboratories, The National University of Singapore. AM on May 18, 1998
8. Seminar on “Computer-Assisted Neurovascular Surgery,” presented to Kent Ridge Digital Laboratories, The National University of Singapore. PM on May 18, 1998
9. Seminar on “Computer-Assisted Neurovascular Surgery,” presented to The National University of Singapore, Medical Informatics Program. PM on May 18, 1998
10. Seminar on “Holistic Communication – A Comprehensive Approach to Human Communication using Gesture, Speech, and Gaze,” to Institute of Advanced Telecommunications Technology Consortium of Holistic Non-verbal Communications Consortium gathered at Colorado Springs, January 30, 1999.
11. Seminar on “A Comprehensive Approach to Human Communication using Gesture, Speech, and Gaze,” to the Artificial Intelligence Seminar, Beckman Center, The University of Illinois at Urbana-Champaign, February 16, 1999.