COURSE NOTES

C9

UNDERSTANDING VISUAL

PERCEPTION AND ITS

IMPACT IN COMPUTER

GRAPHICS

Chair
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Lecturers
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Gary Meyer
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Abstract

This course is an introduction to visual psychophysics, the study of human visual perception, and its potential applications in computer graphics. The course covers basic aspects of human visual perception, design of psychophysical experiments, perceptual issues in display of synthetic images, color perception, and the potential incorporation of psychophysical models in image synthesis algorithms.

Speaker Biographies

Elizabeth Davis received her Ph.D. in Experimental Psychology from Columbia University in 1979, where she was a student of Norma Graham. Her dissertation studied uncertainty effects in the detection of visual patterns. For the next two years she was a postdoctoral fellow at New York University, supported by a National Research Services Award from N.I.H. At N.Y.U. she studied sensory physiology and did single-cell recording in the striate cortex and superior colliculus of cat. Beth was a Research Assistant Professor, then and Associate Professor at the State University of New York, College of Optometry. At SUNY her resea4rch was supported by grants from the National Eye Institute of NIH. This research consisted of theoretical and empirical studies of processing spatio-temporal information by the visual system. In addition to basic research interests, at SUNY Beth developed applied, clinical research interests -- doing quantitative studies of pre-surgical evaluation of cataract patients. In the fall of 1990 she moved to Georgia Tech where she is an Associate Professor in the School of Psychology. At Tech she is able to combine her interests in visual psychophysics and computer graphics -- in 1987 she had obtained an M.S. degree in computer science from the School of Engineering and Applied Science at Columbia University.

James A. Ferwerda is a Senior Project Leader at the Program of Computer Graphics at Cornell University. He received a B.A. in experimental psychology in 1980 and an M.S. in computer graphics in 1987, both from Cornell University. He is currently a candidate for the Ph.D. in experimental psychology. His research interests include: realistic image synthesis; ecological approaches to visual perception; and methodologies for human-computer interactions. He currently leads a research group investigating perceptual issues in three-dimensional interactive computer graphics. He is a member of ACM SIGGRAPH, IEEE, and SMPTE.

Brian Guenter received his Ph.D. in computer science from the Ohio State University in 1989. He is currently an Assistant Professor in the College of Computing at Georgia Institute of Technology. His research interests are in the development of image synthesis algorithms which incorporate models of human visual characteristics and the development of very high level computer animation systems. He is a member of ACM SIGGRAPH, and IEEE

Gary Meyer is an Assistant Professor in the Department of Computer and InfOormation Science at the University of Oregon. His research interests include color reproduction and color selection of the human-computer interface, perceptual issues related to synthetic image generation, and the application of computer graphics to scientific computing. Meyer has been a member of the technical staff at Bell Telephone Laboratories. He received a B.S from the University of Michigan, an M.S. from Stanford University, and a Ph.D. from Cornell University. He is a member of ACM SIGGRAPH, IEEE Computer Society, SMPTE, and OSA.

Larry N. Thibos was born on Christmas Day, 1947, in Detroit, Michigan. He received the B.S. (1970) and M.S. (1972) degrees in Electrical Engineering from the University of Michigan and the Ph.D. degree (1975) in Physiological Optics from the University of California at Berkeley.

During the period 1975-1983 he was a Research Fellow at the John Curtin School of Medical Research, Australian National University, where he investigated the neurophysiology of retinal information processing. In 1983 he joined the faculty of Indiana University, Department of Visual Sciences, School of Optometry, where his research interests have developed to include optical, physiological, and psychological aspects of vision.

Course Schedule

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