THE CHINESE UNIVERSITY OF HONG KONG

SHUN HING INSTITUTE OF ADVANCED ENGINEERING

Shun Hing Distinguished Lecture Series 2007

Image Processing Using Quadratic Volterra Filters

by

Professor Sanjit K. Mitra

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University of Southern California, USA

Date: 04 December 2007, Tuesday

Time: 5:00 p.m. – 6:30 p.m.

Venue: Lecture Theater, 9/F, William M.W. Mong Engg. Bld., CUHK

Abstracts

Two-dimensional quadratic Volterra operators developed for edge enhancement are reviewed. A number of practical image processing applications of these filters are then considered and the proposed algorithms are outlined. These applications include image contrast enhancement, impulse noise removal, image zooming, and image half-toning. In each of these applications, it is shown that the processed images appear perceptually much better in quality than those obtained using many other well-known methods.

Biography of the Speaker

Sanjit K. Mitra is the Stephen and Etta Varra Professor of Engineering in the Ming Hsieh Department of Electrical Engineering, University of Southern California, Los Angeles. He obtained his B.Sc. with honors in Physics (1953) and the M.Sc. (Tech.) in Radio Physics and Electronics (1956) in India. He then obtained his the M.S. (1960) and Ph.D. (1962) in electrical engineering from UC Berkeley. He has published over 640 papers in the areas of analog and digital signal processing, and image processing. He has also authored and co-authored twelve books, and holds five patents. Dr. Mitra has served IEEE in various capacities including service as the President of the IEEE Circuits & Systems Society in 1986, and has held visiting appointments in Australia, Austria, Brazil, Croatia, Finland, Germany, India, Japan, Norway, Singapore, Turkey, and the United Kingdom.

Dr. Mitra is the recipient of the 1973 F.E. Terman Award and the 1985 AT&T Foundation Award of the American Society of Engineering Education, the 1989 Education Award, and the 2000 Mac Van Valkenburg Society Award of the IEEE Circuits & Systems Society, the Distinguished Senior U.S. Scientist Award from the Alexander von Humboldt Foundation of Germany in 1989, the 1996 Technical Achievement Award, the 2001 Society Award and the 2006 Education Award of the IEEE Signal Processing Society, the IEEE Millennium Medal in 2000, the McGraw-Hill/Jacob Millman Award of the IEEE Education Society in 2001, the 2002 Technical Achievement Award of the European Association for Signal Processing (EURASIP), the 2005 SPIE Technology Achievement Award of the International Society for Optical Engineers, the University Medal of the Slovak Technical University, Bratislava, Slovakia in 2005, and the 2006 IEEE James H. Mulligan, Jr. Education Medal. He is the co-recipient of the 2000 Blumlein-Browne-Willans Premium of the Institution of Electrical Engineers (London) and the 2001 IEEE Transactions on Circuits & Systems for Video Technology Best Paper Award. He has been awarded Honorary Doctorate degrees from the Tampere University of Technology, Finland, the Technical University of Bucharest, Romania, and the Technical University of Iasi, Romania. He is a member of the U.S. National Academy of Engineering, a member of the Norwegian Academy of Technological Sciences, an Academician of the Academy of Finland, a corresponding member of the Croatian Academy of Sciences and Arts, corresponding member of the Academy of Engineering, Mexico, and a Foreign Fellow of the National Academy of Sciences, India and the Indian National Academy of Engineering. Dr. Mitra is a Fellow of the IEEE, AAAS, and SPIE, and a member of EURASIP.

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ENQUIRIES: SHIAE, CUHK, Tel: 3163 4351

**** light refreshment will be served after 4:30 p.m. on 9/F ****