

## Sunanda Mitra, Short Curriculum Vitae, 2012

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### Education

D.Sc., Physics, Marburg University, Federal Republic of Germany, 1966.

M.S., Physics, Calcutta University, India, 1957.

B.S., Physics, Calcutta University, India, 1955.

### Appointments

- P. W. Horn Professor, Texas Tech University, Department of Electrical and Computer Engineering 2005 – present
- Director and Founder of Computer Vision and Image Analysis Laboratory, Texas Tech University 1988 – present
- Professor, Texas Tech University, Dept. of Electrical and Computer Engineering 1993 – 2005
- Adjunct Professor, Texas Tech University Health Sciences Center, Department of Radiology 1995 – 2003
- Associate Professor, Texas Tech University, Department of Electrical and Computer Engineering 1990 – 1993
- Assistant Professor, Texas Tech University, Department of Electrical and Computer Engineering 1984 – 1990
- Visiting Faculty, The Mount Sinai School of Medicine 1983 – 1984
- Research Associate, Texas Tech University, School of Medicine 1977 – 1983
- Research Associate, Texas Tech University, School of Medicine 1974 – 1975
- Research Associate, Texas Tech University, Dept. of Electrical Engineering 1969 – 1973
- Research Assistant, Marburg University, Federal Republic of Germany 1964 – 1966
- Lecturer in Physics, Calcutta University, Lady Brabourne College 1959 – 1964
- Research Fellow, Saha Institute of Nuclear Physics, Calcutta, India 1958 – 1959

### Selected Relevant Publications

1. L. Ye, J. Guo, B. Nutter, and S. Mitra, "Efficient video coding based on backward coding of wavelet trees", *Opt. Eng.* 51(4), April, 2012.
2. Linning Ye, Jiangling Guo, Brian Nutter, and Sunanda Mitra, "Low memory usage image coding with line-based wavelet transform", *Optical Engineering*, 50(2), February, 2011.
3. Yeshwanth Srinivasan, Enrique Corona, Brian Nutter, Sunanda Mitra, and Sonal Bhattacharya, "A Unified Model Based Image Analysis Framework for Automated Detection of Precancerous Lesions in Digitized Uterine Cervix Images," *IEEE Journal of Selected Topics in Signal Processing*, special issue on Digital Image Processing Techniques for Oncology, Vol. 3, No. 1, pp. 101-111 (2009).
4. Pat Delucia, Robert Mather, John Griswold, Sunanda Mitra, "Toward the improvement of image-guided interventions for minimally-invasive surgery: Three factors that affect performance," *Human Factors: Journal of the Human Factors and Ergonomics Society: Special Issue on Patient Safety*, Vol. 48. No.1, pp 23-38, 2006.
5. S. Yang, S. Mitra, E. Corona, B. Nutter and D. J. Lee, "Multi-level Wavelet Feature Statistics for Efficient Retrieval, Transmission, and Display of Medical Images by Hybrid Encoding" *EURASIP Journal on Applied Signal Processing, Special Issue on Advances in Modality-oriented Medical Image Processing*, pp. 449-460, vol. 2003, no. 5, April, 2003.
6. Enrique Corona, Sunanda Mitra, Mark Wilson, Tom Krile, Young Kwon and Peter Soliz, "Digital Stereo Image Analyzer for Generating Automated 3-D Measures of Optic Disc Deformation in Glaucoma," *IEEE Transactions on Medical Imaging*, Vol. 21, No. 10, pp. 1244-1253, 2002..

### **Other Selected Significant Publications**

1. Yeshwanth Srinivasan, Fei Gao, Bhakti Tulpule, Shuyu Yang, Sunanda Mitra, and Brian Nutter, "Segmentation and Classification of Cervix Lesions by Pattern and Texture Analysis," The International Journal of Intelligent Systems Technologies and Applications, Vol. 1, Nos. 3/4, pp. 234 - 246, 2006.
2. D. Ferris, S. Mitra, and B. Nutter. Digitized Cervical Images: Problems, Solutions, and Potential Medical Impact. *Journal of Lower Genital Tract Disease*, vol. 10, no. 1, pp. 10-15, 2006.
3. J. Jeronimo, R. Long, L. Neve, D. Ferris, K. Noller, M. Spitzer, S. Mitra, J. Guo, B. Nutter, P. Castle, R. Herrero, A. Rodriguez, and M. Schiffman. Preparing Digitized Cervigrams for Colposcopy Research and Education: Determination of Optimal Resolution and Compression Parameters. *Journal of Lower Genital Tract Disease*, vol. 10, no. 1, pp. 39-44, 2006.
4. Scott Newton, Surya Pemmaraju, and Sunanda Mitra, "Adaptive Fuzzy Leader Clustering of Complex Data Sets in Pattern Recognition," IEEE Transactions On Neural Networks, Vol. 3, No. 5, pp. 794 - 800, 1992.

### **Selected Significant Invited Book Chapters and Papers**

1. Brian Nutter and Sunanda Mitra, "Secure Medical Image Retrieval over the Internet," Invited Paper, Proceedings of IEEE Conference on Multimedia and Expo, pp. 691-694 (2007)
2. Jiangling Guo, Sunanda Mitra, Tanja Karp and Brian Nutter, "A Resolution- and Rate- Scalable Image Sub-band Coding Scheme with Backward Coding of Wavelet Trees," Invited Paper, Proceedings of IEEE Asia Pacific Conference on Circuits and Systems, pp. 443-446 (2006).
3. Linning Ye, Jiangling Guo, Tanja Karp, Sunanda Mitra, and Brian Nutter, "Three-Dimensional Subband Coding of Video with 3-D BCWT," Invited Paper, Proceedings of 40th Annual Asilomar Conference on Signals, Systems, and Computers, pp. 401-405 (2006).
4. S. Mitra and S. Yang. Statistical and Adaptive Approaches for Optimal Segmentation in Medical Images. Invited Book Chapter in Handbook of Medical Image Analysis: Segmentation Models, Part B, Chapter 6, pp 267-314, edited by Suri / Wilson / Laxminarayan , Kluwer Academic/Plenum Publishers, New York, 2005.
5. Sunanda Mitra, Shuyu Yang, Roopesh Kumar, and Brian Nutter, "An Optimized Hybrid Vector Quantization for Efficient Source Encoding," Invited Paper, Proceedings of IEEE Midwest Symposium on Circuits and Systems, Vol. II, # 180 (2002).
6. Sunanda Mitra, Yong Soo Kim and Surya Pemmaraju, "Adaptive Pattern Recognition by Self-organizing Neural Networks," Book Chapter in Neural and Fuzzy Systems, Eds. Sunanda Mitra, Madan Gupta, and Wolfgang Kraske, SPIE Institute Series, Vol. IS12, 1994.

### **Synergistic Activities**

1. Recipient of the following awards: P. W. Horn Professorship (2005), Barnie E. Rushing Jr. Faculty Distinguished Research Award (2002), Martin Tactical Aircraft Systems Award for Excellence in Engineering Teaching (1996), Halliburton Award of Excellence for Research (1991), Halliburton Award of Excellence for Research (1987), National Society to Prevent Blindness Research Award (1983).
2. General Chair, IEEE Southwest Symposium on Image Analysis and Interpretation, Austin, TX (2000) and 8<sup>th</sup> IEEE Symposium on Computer Based Medical Systems, Lubbock, TX (1995), Organizing Committee Member of IEEE Symposium on Computer Based Medical Systems (1995 – 2004).
3. Member of Board of Scientific Counselors, National Library of Medicine, 1997 – 2001.
4. Associate Editor, Journal of Electronic Imaging, The International Society for Optical Engineering (SPIE), The Society for Imaging Science and Technology (IS&T), 1998 – 2001.
5. Professional Societies: Senior Member of IEEE, Senior Member of SPIE, Member of IEEE Computer Society, Member of IEEE Signal Processing Society.

Dr. Mitra has produced 17 Ph.D., 48 MSEE and MSCS awardees. She has sponsored 3 post-doctoral researchers.