

Dr. Serene Banerjee

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Goal: Full-time position in software design for image/video processing systems.

Education

Doctor of Philosophy in Electrical Engineering (Specialization: Computer Engineering)
The University of Texas at Austin, Austin, Texas USA (August 2004)

Thesis title: *Composition-Guided Image Acquisition*

Advisor: Professor Brian L. Evans

Improved image acquisition in digital still cameras, based on photographic composition guidelines, with applications in camera-enabled electronic devices.

Master of Science in Electrical Engineering (Specialization: Computer Engineering)
The University of Texas at Austin, Austin, Texas USA (May 2001)

Major GPA: 3.67 / 4.0

Overall GPA: 3.61 / 4.0

Advisor: Professor Brian L. Evans

Bachelor of Technology (H), Electronics and Electrical Communication Engineering
Indian Institute of Technology, Kharagpur Kharagpur, India (May 1999)

CGPA: 9.43 / 10.00

Thesis title: *Stereo Image Reconstruction using Wavelet Transform*

Advisor: Professor Biswanath N. Chatterjee

Implemented 3-D reconstruction from stereo images, using wavelet transforms.

Work Experience

Industrial Positions

- 1. Imaging Scientist, Sozotek Wireless Inc., Austin, TX, June 2004-August 2004**
Project: Improving image communication over cellular phones, under Mr. Gordon Ford.
- 2. Summer Intern, Ricoh Research Center, Menlo Park, CA, Summer 2002**
Transport of Reversible and Unreversible Embedded Wavelets (TRUEW) Design for JPEG2000 Interactive Protocol, under Dr. Michael J. Gormish & Mr. Martin Boliek.
- 3. Summer Intern, Nokia Mobile Phones R&D Center, Irving, TX, Summer 2001**
Performance optimization of JPEG2000 for video phones on Texas Instruments' Open Multimedia Application Platform, under Dr. Fred W. Ware
- 4. Summer Trainee, Hughes Software Systems, Gurgaon, India, Summer 1998**
Worked on the Design and Implementation of the project "Embedded Database for Client-Server mode of Computer Interconnection", on VxWorks platform.

University Research

- 5. Research Assistant, ESPL, UT Austin, Summer 2003-Spring 2004**
Project: Video Codec Development on National Instrument's LabView and Texas Instruments' Open Multimedia Application Platform, under Prof. Brian L. Evans.
- 6. Research Assistant, Center for Space Research, UT Austin, Fall 2002-Spring 2003**
Project: Light Detection and Ranging (LIDAR) Processing, under Prof. Melba Crawford.
- 7. Research Assistant, ESPL, UT Austin, Summer 2000-Spring 2002**

Project: Optimization of Foveated H.263 Video Coder, under Prof. Brian L. Evans. Responsible for implementing foveated H.263 video encoder on TI TMS320C6000 processor and optimize it for speed and performance.

8. **Teaching Assistant, Electrical Engineering, UT Austin, Fall 1999-Spring 2000**
Supervised seniors for projects in Digital Design area, under Prof. Baxter F. Womack. Conducted labs for Real-Time Digital Signal Laboratory, under Prof. Brian L. Evans.

Service

- **Lab Manager**, Embedded Signal Processing Laboratory, Electrical and Computer Engineering, UT Austin, Spring 2002 – Fall 2003
- **Student Coordinator**, Wireless Networking and Communications Seminar, Electrical and Computer Engineering, UT Austin, Fall 2000 – Spring 2003

Relevant Courses (At UT, Austin)

Information Theory, Embedded Software Systems, Opt. in Eng. Systems, Graphics Compression, Computer Networks, Neural Networks, Data Mining, Operating Systems, Vision Systems, Multidimensional DSP, Probability and Stochastic Proc. , VLSI-I, Real Analysis, SuperScalar Microprocessor Arch. , Signal Compression, Digital Signal Proc. , Eng. Programming Languages, Digital Image and Video Proc., Wavelets, Photography

Skills

1. **Assembly Languages:** Texas Instruments TMS320C3000, TMS320C6000 VLIW DSP, and TMS320C5500, Intel 8085/86, Motorola M-Core, ARM.
2. **High-level Languages:** Java, C++, C, Fortran.
3. **Operating Systems:** TI DSP BIOS, VxWorks, Unix
4. **Electronic Design Automation Tools:** Ptolemy, SimpleScalar, Micro Magic tools
5. **Algorithm development environments:** Matlab, LabView
6. **Software development tools:** Makefiles, Source Code Control, CodeComposer Studio

Patents

Michael J. Gormish and Serene Banerjee, "TRUEW: Transport of Reversible and Unreversible Embedded Wavelets", *RII-295, Application No.: 10/273734*, filed by Ricoh Innovations, Inc., Oct. 18th, 2002, USA

Honors and Awards

1. May 2004 *Travel Grant*, Center for Perceptual Systems, UT Austin.
2. 2002 *Nokia Mobile Phones R&D Intern Scholarship Award*, Irving, TX.
3. 2000-2001 *TxTEC Graduate Fellowship*, for graduate achievements, UT Austin.
4. Spring 2001 *Best Project Award*, Data Mining, (M. Vazquez, N. Koo, and S. Taank).
5. Rank: 3 / 39 in the Dept. of E&ECE, IIT Kharagpur.
6. 1999 *Sarat Memorial Award*, for highest CGPA amongst women, IIT Kharagpur.
7. 1999 *Suhasini Devi Memorial Award*, for best woman all rounder, IIT Kharagpur.
8. 1997 *Hughes Software Systems Best Student Award*, IIT Kharagpur.
9. 1997 *S. Basak Memorial Award*, for best Social Service volunteers, IIT Kharagpur.
10. Placed in National Top 1% in National Standard Examination in Physics, 1995.
11. Selected in Top-30 in Jagadish Bose National Science Talent Search Test, 1995.

12. Selected in Regional Mathematics Olympiad, 1993.

Publications

Refereed Journal Papers

1. S. Banerjee and B. L. Evans, “Low-Complexity Unsupervised Automation of Photographic Composition Rules for In- Camera Image Acquisition”, *IEEE Transactions on Image Processing*, in preparation.

Refereed Conference Papers

1. S. Banerjee and B. L. Evans, “Unsupervised Merger Detection and Mitigation in Still Images Using Frequency and Color Content Analysis”, *Proc. IEEE Int. Conf. on Acoustics, Speech and Signal Processing*, May 17-21, 2004, vol. III, pp. 549-552, Montreal, Canada.
2. S. Banerjee and B. L. Evans, “Unsupervised Automation of Photographic Composition Rules in Digital Still Cameras”, *Proc. SPIE/IS&T Conf. on Sensors, Color, Cameras, and Systems for Digital Photography*, Jan. 18-22, 2004, vol. 5301, pp. 364-373, San Jose, CA.
3. S. Banerjee and B. L. Evans, “A Novel Gradient Induced Main Subject Segmentation Algorithm for Digital Still Cameras”, *Proc. IEEE Asilomar Conf. on Signals, Systems and Computers*, Nov. 9-12, 2003, Pacific Grove, CA.
4. M. J. Gormish and S. Banerjee, “Tile-Based Transport of JPEG 2000 Images”, *Proc. EURASIP Int. Workshop on Visual Content Processing and Representation*, Sep. 18-19, 2003, pp. 217-224, Madrid, Spain.
5. S. Banerjee and M. J. Gormish, “The Transport of Reversible and Unreversible Embedded Wavelets (TRUEW)”, *Proc. IEEE Conf. on Data Compression*, Mar. 25-27, 2003, pp. 415, Snowbird, UT.
6. Z. Wang, S. Banerjee, B. L. Evans and A. C. Bovik, “Generalized Bitplane-by-Bitplane Shift Method for JPEG2000 ROI Coding”, *Proc. IEEE Int. Conf. on Image Processing*, Apr. 22—25, 2002, vol. III, pp. 81—84, Rochester, NY.
7. S. Banerjee and B. L. Evans, “Tuning JPEG2000 Image Compression for Graphics Regions”, *Proc. IEEE Southwest Symposium on Image Analysis & Interpretation*, Apr. 7—9, 2002, pp. 67—71, Santa Fe, NM.
8. S. Banerjee, L. K. John, and B. L. Evans, “The EASE Branch Predictor”, *Proc. IEEE Int. Conf. on Communication, Computers and Devices*, Dec. 14-16, 2000, vol. I, pp. 59—62, Kharagpur, India.
9. S. Banerjee, H. R. Sheikh, L. K. John, B. L. Evans, and A. C. Bovik, “VLIW vs. SuperScalar Implementation of a Baseline H.263 Video Encoder”, *Proc. IEEE Asilomar Conf. on Signals, Systems, and Computers*, Oct. 29-Nov. 1, 2000, vol. 2, pp. 1665—1669, Pacific Grove, CA.

Standards Contributions (JPEG 2000)

1. M. Gormish and S. Banerjee, “TRUEW: Transport of Reversible and Unreversible Wavelets (A JPIP proposal)”, *ISO/IEC JTC 1/SC 29/WG1 N2602*, Jul. 3, 2002, California Research Center, Ricoh Innovations, Inc., Menlo Park, CA.

Other Major Publications

1. H. R. Sheikh, S. Banerjee, B. L. Evans, and A. C. Bovik, "Optimization of a Baseline H.263 Video Encoder on the TMS320C6x", *Proc. TI DSP Educator's Conf.*, Aug. 2-4, 2000, Houston, TX.

Interests and Activities: Sitar, Dramatics, Choreography, Painting, Embroidery, and Poetry

Country of Citizenship: India, ***Visa Status:*** F1