

SANDEEP BHAT

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OBJECTIVE

To pursue a research career in the field of Image Processing, Analysis and Computer Vision.

EDUCATION

University of California, Santa Barbara, USA

Ph.D in Signal Processing (ECE), since January 2009

Cumulative GPA: 3.77/4.00

Expected Date of Graduation: Dec, 2012

M.S in Signal Processing (ECE), December 2009

Major: Signal Processing, Minor: Communications

Cumulative GPA: 3.77/4.00

R.V.College of Engineering, Bangalore, India

Bachelor of Engineering in Electronics and Communications from

Visveswaraiah Technological University, July 2003

Aggregate Percentage: 87.68 %

SECOND rank for the University and FIRST rank for the College

PROFESSIONAL MEMBERSHIPS

Member of the Institute of Electrical and Electronics Engineers (IEEE)

Member of the Society for Industrial and Applied Mathematics (SIAM)

RELEVANT COURSE WORK

Graduate

Digital Image Processing (A), Imaging Systems (A), Advanced Topics in Computer Vision (A), Algorithmic Visualizations (A), Multirate Digital Signal Processing (A), Computational Biocrosscopy (A), Engineering Writing (A+), Fourier Analysis (A), Matrix Analysis (A-), Signal Compression (A-), Advanced Digital Signal Processing (A-)

Undergraduate

Signals and Systems, Digital Signal Processing, Adaptive Signal Processing, Analog Communications, Digital Communication, Control Engineering, Satellite Communication, Advanced communications Lab, Communication Networks (Theory and Lab), C-programming, Object Oriented Programming Using C++, Data Structures Using C++

SKILLS

- High-level languages: C, C++
- Algorithm development: MATLAB, Processing (Java)
- Software development: Microsoft Visual Studio, TI's Code Composer Studio, Eclipse IDE
- Operating Systems: Windows, Mac OS X, Linux
- Real-time Operating Systems: Embedded Linux
- Scripting: Windows Batch, Linux Shell
- Version Management: CVS, SVN
- Other Software: MS Office, LaTeX, Adobe Photoshop, Illustrator

WORK EXPERIENCE

Research Assistant

Currently working with Prof. Michael Liebling, ECE, UCSB in the Systems Bioimaging Lab. My current research focus is on techniques for reconstruction and analysis of multi-dimensional images of the embryonic heart.

Teaching Assistant

- Prof. Melliar-Smith, ECE160 (Fundamentals of Multimedia), UCSB, Spring 2008, 2009 [Received ECE outstanding TA award in 2009].
- Prof. Rudolph, ECE152a (Digital Design Principles), UCSB, Summer 2008.

Research Mentor

Mentored advanced high school students as part of UCSB's Summer Research Mentorship Program (RMP) 2009, 2010, 2011

Senior Development Engineer at Ittiam Systems Pvt. Ltd, India in the Media Processing group from July 2003 to August 2007.

- Design and implementation of a Media Engine and Media System Framework similar to Linux gStreamer, for development of Multimedia Player and Recorder on TI's DaVinci platform.
- I was also responsible for making software releases to several customers (Korean, Taiwanese and American). I was also sent onsite once (Thomson, Indianapolis, USA) to assist the customer with their product development.
- Design and development of a Media System, capable of handling multiple file formats, Video and Audio formats for Audio, Video and image playback and Audio, Video recording. These were developed on TI's DM270 platform and have hence been re-used in DM320 and DaVinci platforms. The work has involved development of algorithms for distributed processing on dual core processors (DM270, DM320 and DaVinci), Audio-video syncing algorithms, FF/REW mechanism, Power management algorithms, Data Buffering schemes for slower media and networks. This product has hence been deployed in several handheld video player recorders for customers like Creative, Microsoft and Thomson (RCA).

- Design and development of Network Security Camera that uses MPEG 4 standard for video recording based on TIs DM270 platform.
- Design and development of Video email application for Set Top Box using eCOS on TIs DM270 platform.
- Design and development of Hard Disk and Compact Flash Drivers on TIs DM320 and DM270 platforms.
- Development of On Screen Display (OSD) Drivers for TIs DSC 25, DM270 and DM320 platforms.
- Development of EXIF and JFIF image parsers for PC, DSC 25, DM270 and DM320 platforms.

Project Trainee at Control Systems Group, Indian Space Research Organisation Satellite Centre, Bangalore from March 2003 to June 2003

Experience includes hardware design for VMS (vibration measurement system) on board a satellite. The project involved the development of hardware logic using Actel FPGA to interface the components on the processor card used in Vibration Analysis and Satellite control. The logics were realized in VHDL.

PUBLICATIONS

Papers

- **Sandeep Bhat**, Irina V Larina, Kirill V Larin, Mary E Dickinson, Michael Liebling, “Reconstruction of a 3D+Time OCT cardiac volume from multiple 2D+Time sequences acquired along two viewpoints”, Journal of Optical Society of America A (manuscript in preparation)
- **Sandeep Bhat**, Jungho Ohn, Michael Liebling, “Motion-based structure separation for label-free, high-speed, 3D cardiac microscopy,” IEEE Transactions on Image Processing 2012 (“accepted with minor revisions (AQ)”, revision in preparation).
- **Sandeep Bhat**, Michael Liebling, “Separation and Pseudo-Coloring of High-Speed Bright-Field Microscopy Images of the Beating Embryonic Heart,” 44th Annual Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, November, 2010 (Paper selected for oral presentation)
- Michael Liebling, **Sandeep Bhat**, Jungho Ohn, “Multiscale, multimodal, and multidimensional microscopy of cardiac development,” 2010 IEEE Workshop on Signal Processing Systems, San Francisco Bay Area, California, USA, Oct 2010.
- **Sandeep Bhat**, Irina V Larina, Kirill V Larin, Mary E Dickinson, Michael Liebling, “Multiple-cardiac-cycle noise reduction in dynamic optical coherence tomography of the embryonic heart and vasculature”, Optics Letters, Vol. 34, Issue 23, pp. 3704-3706, Dec 2009
- **Sandeep Bhat**, Michael Liebling, “Cardiac Tissue and Erythrocyte Separation in Bright-Field Microscopy Images of the Embryonic Zebrafish Heart for Motion Estimation”, IEEE Proc. of International Symposium on Biomedical Imaging09, pp. 746-749, July 2009 (Paper selected for oral presentation)

Posters

- **Sandeep Bhat**, Michael Liebling, “Heart Wall And Erythrocyte Motion Estimation In The Embryonic Zebrafish Via Blind Source Separation Of Brightfield Microscopy”, BioImage Informatics Conference 2009, Janelia Farms/HHMI, Ashburn, VA

Talks

- **Sandeep Bhat**, Michael Liebling, “Improving Specificity in Bright-Field Microscopy Images of the Beating Embryonic Heart via Motion-Based Separation”, 12th Annual UC Systemwide Bioengineering Symposium. One of the nine finalists chosen for “*Grand Challenges in Bioengineering*” competition.

Thesis

- **Sandeep Bhat**, “Separation, Denoising, and Reconstruction of Multi-Dimensional Cardiac Microscopy Datasets for Improved Visualization and Flow Analysis,” work in progress. Chosen for the 2012 ECE Spring Dissertation Fellowship.

ACHIEVEMENTS AND AWARDS

- Was awarded the 2012 Spring Dissertation Fellowship from the ECE Dept., UCSB.
- Finalist in the “*Grand Challenges in Bioengineering*” competition held at 12th Annual University of California Systemwide Bioengineering Symposium, 2011.
- “Image Registration and Mosaicking”, a project done as part of Advanced Topics in Computer Vision course (ECE Dept.,UCSB) won the “Best Project” award for the class.
- Received outstanding TA award in 2009 from the ECE Dept., UCSB.
- Secured the SECOND rank in Electronics and Communications from Vishweshwaraiah Technological University for year 2003.
- Secured the FIRST rank in Electronics and Communications in college for year 2003.
- Certificate of Merit from R.S.S.T for 2003 and 2004 for securing the FIRST place in the College for 5th, 6th, 7th and 8th semesters
- Received the Excellence In Education Award for 2002 from RVCE81EL GROUP.

EXTRA CURRICULAR INTERESTS

- Photography: I love photography. To view my work please check out <http://www.flickr.com/photos/sandeepkbhat/>.
- Radio Jockey: I’m a RJ for the *India Show* on KCSB 91.9 FM, Santa Barbara.
- Traveling: I love to travel, an interest that goes well with my urge to take photos. I also love hiking and trekking.
- Sports: I play cricket, badminton and table tennis. My favorite sport though is squash.
- Sketch work: I do pencil sketches and am pretty good at it. I have been doing this for as long as I have known how to handle the pencil.