

Debarati Kundu

915 E 41st Street, Apt 105
Austin, TX 78751
USA

<http://signal.ece.utexas.edu/~debarati/>
debarati@utexas.edu
+1 5122969026

Objective: Looking for a full-time position in research or software development related to multimedia processing and computer vision.

Education:

PhD, Electrical and Computer Engineering

August 2012 – May 2016

The University of Texas at Austin, CGPA - 3.7/4.0, Adviser: Dr. Brian L. Evans

Area of Interest: Image and Video Quality Assessment of synthetic scenes using Natural Scene Statistics

Courses include Digital Video, Computer Graphics, Large Scale Optimization, Geometric Modeling and Visualization, Advanced Programming Tools, Stochastic Detection Estimation and Control.

Master of Science, Electrical and Computer Engineering

August 2010 – May 2012

The University of Texas at Austin, CGPA - 3.7/4.0, Adviser: Dr. Brian L. Evans

Courses included Data Mining, Sparsity Structure and Algorithms, Probability and Stochastic Process, Information Theory, Real Analysis, Digital Signal Processing, Multiscale and Multirate Signal Processing, Digital Image and Video Processing, Vision Systems, Wireless Communication Laboratory.

Bachelor of Electronics and Tele-Communication Engineering

July 2006 - June 2010

Jadavpur University, CGPA – 9.42/10.00, GRE – 1400/1600, Adviser: Dr. Swagatam Das

Electives: Analog and Digital Communications, Computer Communication Networks, Digital Signal Processing, Microwave Engineering, Embedded Systems, Compiler Design, Operating Systems, Computer Architecture, VLSI Design.

Professional Experience:

Graduate Research Assistant, The University of Texas at Austin

January 2015 – present

Acting as a Graduate Research Assistant in Embedded Signal Processing Laboratory and am involved in designing no-reference visual quality assessment algorithms for synthetic scenes based on natural scene statistics.

Interim Engineering Intern, Qualcomm Corp. R&D

May 2014 – August 2014

Developed a learning based algorithm for online handwriting recognition of Devanagari script. Improved recognition rate of existing algorithms and implemented a prototype on Android. Prototyped in MATLAB an automatic voice recognition system as a part of Qualcomm Intern IdeaQuest. **Awarded Qualcomm Roberto Padovani fellowship 2014 for being an outstanding intern (top 1%)**

3D Vision Research Intern, Nokia Research Center

May 2013 – August 2013

Improved the Simple Linear Iterative Clustering algorithm for superpixel image segmentation for parallelization on a custom baseband multi-core low-power parallel processor, within a time budget of 150 ms for 1920X1080 video.

Software Design Intern, Freescale Semiconductor

June 2012 - August 2012

Implemented a Linux device driver on BSC9131RDB PowerPC+StarCore DSP dual core board for inter-processor communication between the two cores using 'remoteproc' framework.

Teaching Assistant, The University of Texas at Austin

January 2014 – May 2014, June 2015 – August 2015

Served as a Teaching Assistant for Algorithms. Had to hold office hours for students to clear their doubts on questions regarding implementation and analysis of algorithms, grade quizzes, and prepare and grade programming assignments in Java.

Teaching Assistant, The University of Texas at Austin

August 2010 - December 2010, June 2011 – December 2014

Served as a Teaching Assistant of Real Time Digital Signal Processing Laboratory. Developed course materials and conducted laboratory sessions to guide students in implementing an audio transceiver system on TI's C6000 floating-point programmable digital signal processor using DSP/BIOS real-time operating system and TI's Code Composer Studio IDE. **Awarded the UT Electrical and Computer Engineering outstanding teaching assistant award for Spring 2013 and Fall 2013.**

Graduate Research Assistant, The University of Texas at Austin

January 2011 – May 2011

Served as a Graduate Research Assistant in Wireless Systems Innovation Laboratory and was involved with the development of video adaptive learning algorithms and implementing over a IEEE 802.11a physical layer

Selected Course Projects

“Mobile Video Position and Angle Correction”, Course: Digital Video, Instructor: Dr. Alan C. Bovik (**Best Project Award**)

“Perceptual Quality Evaluation of 3D synthetic objects”. Course: Computer Graphics, Instructor: Dr. Donald Fussell

“3D reconstruction using structure-from-motion”. Course: Sparsity, Structure and Algorithms, Instructor: Dr. Sujay Sanghavi

“Collaborative filtering on Yahoo Music dataset”, Course: Data Mining, Instructor: Dr. Joydeep Ghosh

Technical Skills:

High-Level languages: C, C++, Java

Other Languages: Python, Tcl, Awk, Shell, Javascript, HTML

Software development: Android, Eclipse, Google App Engine, OpenCV, TI Code Composer Studio, Freescale CodeWarrior, HyperX IDE, Microsoft Visual Studio, OpenGL, FLTK

Algorithm development environments: MATLAB, Simulink, LabVIEW

Operating systems: Ubuntu 12.04, Red Hat Enterprise Linux, Mac OS X, Windows XP, Windows 7

Embedded platforms: TI C6000 VLIW DSPs, Freescale BSC9131RDB, HyperX HX3100A, Intel 8051A and 8085A microprocessors

Test and measurement: Signal generators, oscilloscopes, NI 5670 RF Vector Signal Generator, NI 5660 RF Vector Signal Analyzer

Others: LIBSVM, Meshlab, Blender, Knime, Git

Selected Publications:

Kundu, D.; Evans, B.L.;, "Visual Attention Guided Quality Assessment of Tone-Mapped images using Scene Statistics," submitted to *IEEE International Conference on Image Processing*, Sept. 2016

Kundu, D.; Choi, L.K.; Bovik, A.C; Evans, B.L.;, "Subjective and Objective Quality Evaluation of Lightly Distorted Synthetic Images," submitted to *IEEE Transactions on Image Processing*

Kundu, D.; Evans, B.L.;, "No-Reference Synthetic Image Quality Assessment using Scene Statistics," *Asilomar Conf. on Signals, Systems, and Computers*, Nov. 2015

Kundu, D.; Evans, B.L.;, "Full-Reference Visual Quality Assessment for Synthetic Images: A Subjective Study," *IEEE International Conference on Image Processing*, Sept. 2015 (**Won top 10% paper award**)

Kundu, D.; Evans, B.L.; , "Spatial domain synthetic scene statistics," *Asilomar Conf. on Signals, Systems, and Computers*, Nov. 2014

Kundu, D.; Suresh, K.; Ghosh, S.; Das, S.; Panigrahi, B.K.; Das, S.; , "Multi-objective optimization with artificial weed colonies," *Information Sciences, Elsevier*, Volume 181, Issue 12, 15 June 2011, Pages 2441-2454, ISSN 0020-0255, 10.1016/j.ins.2010.09.026

Ghosh, S.; Kundu, D.; Suresh, K.; Das, S.; Abraham, A.; Panigrahi, B.K.; Snášel, V.;, "Inter-Particle Communication in the lbest Particle Swarm Optimizer: An Analysis," *Information Sciences, Elsevier*, 2010.

Kundu, D.; Suresh, K.; Ghosh, S.; Das, S.; Abraham, A.;, "Clustering Using Multi-objective Differential Evolution Algorithms - A Comparative Study," *Fundamenta Informaticae Journal, IOS Press, Netherlands*, 2009.

Suresh, K.; Kundu, D.; Ghosh, S.; Das, S.; Abraham, A.;, "Automatic clustering with multi-objective Differential Evolution algorithms," *IEEE Congress on Evolutionary Computation*, pp.2590-2597, 18-21 May 2009

Professional activities

- Chaired the conference session "Image Processing", *Asilomar Conf. on Signals, Systems, and Computers*, Nov. 2015
- Member of Working Group for IEEE P3333.1 Standard for the "Quality Assessment of Three Dimensional (3D) Displays, 3D Contents and 3D Devices based on Human Factors" **April 2013 - present**
- Served as a reviewer of *IEEE Trans. on Image Processing*, *IEEE Trans. on Multimedia*, *IEEE Signal Processing Letters*, *ACM Trans. on Autonomous and Adaptive Systems*, *IEEE Intl. Conf. on Acoustics, Speech, and Signal Processing*, *European Signal Processing Conf.*, *IEEE Intl. Conf. on Image Processing*, *IEEE Globecom Conf.*, *IEEE Intl. Conf. on Communications*

Awards and Honors:

- Top 10% Paper Award at the *IEEE International Conference on Image Processing*, 2015.
- Qualcomm Roberto Padovani fellowship 2014 for being an outstanding intern (top 1%).
- Outstanding teaching assistant award, Department of Electrical and Computer Engineering, University of Texas at Austin, Spring 2013 and Fall 2013.
- Secured All India Rank of 51 in Graduate Aptitude Test in Engineering, 2010 in Electronics and Communication among 1,04,291 examinees.
- Awarded Indu Bhusan Putatunda and Shanti Sudha Putatunda Memorial Medal, 2008 for securing the highest marks in department in the 2nd Year University Examination held in 2008 by Alumni Association, Jadavpur University, Kolkata, India
- Awarded Sanghamitra Nandi Memorial Gold Medal, 2010 for securing at least 75 percent marks among all girl students of Bachelor of Electronics and Tele-communications Engineering Final Examination, 2010 by Jadavpur University, Kolkata, India.
- Ranked 5th among 55 students of Bachelor of Engineering graduating batch of 2010 of the Department of Electronics and Telecommunications Engineering, Jadavpur University, Kolkata, India.
- Ranked 105th in West Bengal Joint Entrance Examination, 2006 among 76,327 examinees.
- Ranked 131st (State Rank) in All India Engineering Entrance Examination, 2006 among around 500,000 examinees.