

LAKSHMANAN NATARAJ

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EDUCATION

University of California, Santa Barbara

Master of Science (M.S), Electrical and Computer Engineering (ECE), Graduation: Dec 09
Major: Signal and Image Processing Minor: Telecommunications, GPA: 3.65
(Future PhD candidate)

SVCE, Anna University, Chennai, India

Bachelor of Engineering (B.E), June 03 - June 07
Major: Electronics and Communications Engineering
Aggregate: 80.8%, First Class with Distinction

EXPERIENCE

Research Assistant, Vision Research Lab(VRL), Prof. B.S.Manjunath: Winter 08-present, UCSB
Doing research on Media Watermarking/Steganography and Image Forensics.

R&D Graduate Associate, Walt Disney Animation Studios (WDAS), Summer 08

I designed and built a Digital Image Watermarking System to **watermark** more than a million images that belong to Disney. Apart from Watermarking, I enrolled in classes from the Disney Academy on Animation and Graphics(Maya,Shake,After Effects, PhotoShop)

Teaching Assistant, Communication Electronics ECE 145B, Prof. Steve Long : Spring 08, UCSB
Weekly Lab work, Grading of homeworks/exams.

SKILLS

High Level Languages: C, C++

Algorithm Development environments: MATLAB, Mathematica

Document Processing and Website Developing tools: MS Office, Mathtype, Latek, Dreamweaver, HTML

Operating Systems: Windows, Linux, MAC

Graphics Software: Maya(basic), Photoshop, Shake

Software Development tools: Visual DSP++, Code Composer Studio

Assembly Languages: Blackfin BF533 ADSP, TI TMS320C20

RELEVANT COURSES

Graduate:

Digital Image Processing, Digital Speech Processing, Information Coding Theory, Digital Communication, Advanced Digital Communication, Pattern Recognition, Stochastic Processes, Linear Algebra, Matrix Analysis, Fourier Analysis, Computer Vision(audit), Research in Steganography and Image Forensics, Adv Engineering Writing, Advanced DSP, Level Set Methods

Undergraduate:

Engineering Mathematics (3 courses), Signals and Systems, Random Process, Digital Signal Processing, Communication systems, Signal Processing Lab, Communication Systems Lab, Digital Communications, Digital Image Processing, Data Structures.

PUBLICATIONS

Journal

“Local Key-pint based Data hiding-Robust to a host of Local and Global attacks”- A.Sarkar, **L.Nataraj**, B.S.Manjunath (to be submitted to IEEE Transactions on Image Processing)

Conference

“Improving Re-sampling Detection by Adding Noise”- **L.Nataraj**, A.Sarkar, B.S.Manjunath
Proc. SPIE Electronic Imaging, Media Security and Forensics, Jan 2010, San Jose.

“Adding Gaussian Noise to “Denoise” JPEG for Detecting Image Resizing”- **L.Nataraj**, A.Sarkar, B.S.Manjunath, Proc. IEEE International Conference on Image Processing (ICIP09), Cairo.

“Detection of Seam Carving and Localization of Seam Insertions in Digital Images”- A.Sarkar, **L.Nataraj**, B.S.Manjunath, Proc. of ACM Workshop on Multimedia and Security 2009, Princeton.

“Estimation of Optimum Coding Redundancy and Frequency Domain Analysis of Attacks for YASS - a randomized Block Based Hiding scheme”- A.Sarkar, **L.Nataraj**, B.S.Manjunath, U.Madhow
Proc. IEEE International Conference on Image Processing (ICIP08), San Diego, CA

“Brain Computer Interface Analysis using Wavelet Transforms and Auto Regressive Coefficients”-E.S.Gopi, Sylvester Vijay R, Vasudha Rangarajan, **Lakshmanan Nataraj**, Proc. of IEEE International Conference on Electrical and Computer Engineering 2006(ICECE 2006), (19th- 21st) Dec 2006, Dhaka, Bangladesh.

“Digital Image Forgery Detection using Artificial Neural Networks and Auto Regressive Coefficients”-E.S.Gopi, **N.Lakshmanan**, T.Gokul, S.Kumara Ganesh, Prerak.R.Shah, Proc. of IEEE Canadian Conference on Electrical and Computer Engineering (CCECE), (4th-7th) May 2006, Ottawa, Canada.

PROJECTS

Turbo Codes, Course Project for Advanced Digital Communication ECE243B (May 2008) -
Implementation of Parallel Concatenated Turbo codes using BCJR algorithm..

Performance Evaluation of Equalization techniques, Course Project for Digital Communication ECE243A (March 2008) -*Comparison of Maximum Likelihood Sequence Estimation (Viterbi Algorithm) and Decision Feedback Equalization Techniques.*

Blind Speech Separation using ICA, Course Project for Digital Speech Processing ECE259 (March 2008)
-Implementing an ICA based algorithm to separate mixed speech and music signals into original speech and music.

Image Registration System Project, Course Project for Topics in Digital Image Processing ECE278A, December 2007
-This project involved registering an image pair which has undergone translation, rotation or an affine transformation.

Analysis of Watermarking on Bit planes of Images, June 2007
-A brief analysis on watermarking on 8 bit images by replacing bit plane values with watermark.

Detection of tampered images using AR modeling and Artificial Neural Network, March 2007(UG Project)
-This project involved detecting whether a given image has been digitally tampered or not using Auto Regressive Coefficients.

Speech coding (A law), Echo Cancellation, Adaptive Equalization in ADSP Blackfin BF533 processor, June 2006.
(Modules covered as part of Certification Course on Blackfin processor ADSP-BF533)

PROFESSIONAL ACTIVITIES

Student Member of IEEE, since January 2005

References, Transcripts and Certificates available on request.