RESUME

Ananya Sen Gupta
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Citizenship: Indian national with US permanent residence (green card).

EDUCATION:

PhD in Electrical and Computer Engineering, University of Illinois at Urbana-Champaign under the supervision of Prof. Andrew Singer in Dec 2006. Major area of research is Communications and Signal Processing.

MS degree from the Department of Electrical and Computer Engineering under the supervision of Prof. Z.-P. Liang in August 2001. Major area of research was Image Processing.

BE (equivalent to BS) in 1998 from the Department of Electronics and Telecommunications Engineering, Jadavpur University, India.

WORK EXPERIENCE:

(Aug 16th, 2008 - present) - I am currently working as a postdoctoral investigator (previous job title: postdoctoral scholar) at Woods Hole Oceanographic Institution under Dr. James Preisig in the area of underwater acoustic communications. My research focus at WHOI has been on developing sparse optimization and adaptive signal processing techniques for shallow water acoustic channel characterization. Besides research, as part of my postdoctoral teaching experience I have given three guest lectures at MIT for the graduate course in time series analysis when my professor was traveling.
Fall 2011: I am a part-time visiting lecturer at University of Massachusetts Dartmouth, teaching the graduate-level signal processing course ECE574.

(Jan 21, 2008 - Aug 15, 2008) - I worked as a postdoctoral research associate for University of Illinois at Urbana-Champaign. My appointment included a visiting lecturer appointment at the Department of Electrical and Computer engineering (ECE) from June 16 - Aug 15, 2008. I also performed research in the area of signal processing and communications with particular focus on underwater communications for Dr. Andrew Singer, my research supervisor.

(Jan 2, 2007 -Jan 18, 2008) - I worked as a Program Manager for Microsoft (Microsoft Office Shared Services group). Responsibilities included customer research, user-oriented technical research and managing software design. Key learning experience on the job has been to lead cross-team discussions and build consensus across different perspectives, which I find invaluable in conducting inter-disciplinary collaborative research.

(Summer 2001) - I was summer intern at Philips Semiconductors, Hoffman Estates, IL. (Responsibilities: coding in VC++. I designed, implemented and tested a GUI for an ASIC test board in my intern project)

(1998-1999) - I worked as a software trainee in DAIS Infotech, India. (Responsibilities: coding in Java for data-mining applications, customer-oriented market research)

TEACHING EXPERIENCE:

Fall 2011: I am a visiting lecturer at University of Massachusetts Dartmouth teaching the graduate-level Digital Signal Processing course.

Fall 2008: As part of my postdoctoral experience I have given three guest lectures at MIT for the graduate course in time series analysis when my professor was traveling.

Summer 2008: Lecturer in senior/graduate level DSP course (ECE410) in Summer II term.

Fall 2000-Fall 2005: Graduate Teaching assistant for several semesters for the graduate courses in Digital Signal Processing (ECE551) and Control Systems (ECE515) and the senior-level course in DSP (ECE410)

ENGINEERING LEADERSHIP AND TEAM-BUILDING EXPERIENCE:

My team-building skills draw on my experience as a program management in Microsoft where I worked across different teams to build consensus over software design, interacted closely with usability researchers, developers, testers, and other managers, participated in usability studies and customer site visits, researched the competition and translated customer needs to technical goals that were written into technical specifications for the next product cycle.

But my most significant team-building opportunities have been at WHOI, because of the highly synergistic and open academic environment it has offered me a postdoctoral researcher and an aspiring young scientist. The intellectual environment at WHOI has encouraged me to play an active role in collaboration with senior colleagues at WHOI. I have enjoyed working closely with people from diverse technical and scientific backgrounds to understand their needs and build consensus on what scientific questions we wish to answer, the technical issues involved, and how to solve them to meet the common goal of the program.

I am also an active member of the International Committee at WHOI and strive to make my workplace supportive of the unique challenges and needs of our international employees.

MENTORING EXPERIENCE:

As part of my collaboration with my colleague, Jill Nelson, at George Mason University, I am actively involved in mentoring her graduate student, Weiwei Zhou, who I have helped train technically as well as professionally. I also helped my professor advise his graduate students during my postdoctoral term at UIUC and have also been actively involved with graduate students working in my area at WHOI. I have also mentored my students through grad school in my years of teaching as a TA and later, as a lecturer at UIUC.

PROFESSIONAL SERVICE EXPERIENCE:

I have co-organized (with Dr. James Preisig) the special session on 'Sparse Approximations' at the 159th meeting of The Acoustical Society Of America, Baltimore, MD, April 19-23, 2010, and am co-organizing (with Dr. Lee Culver) the special session on “Overcoming environment/medium effects in acoustic tracking of features or parameters”, at the 162nd meeting of the Acoustical Society of America, San Diego, California, 31 October - 4 November 2011. I am also invited to serve on the Technical Program Committee of WUWNet'11, the Sixth ACM International Workshop on UnderWater Networks, which will be held in Seattle, Washington, on December 1- 2, 2011.

I have also reviewed several journal articles for IEEE Signal Processing, IEEE Journal of Oceanic Engineering, Journal of the Acoustical Society of America and among recent conferences have reviewed articles for the SYMPOL Ocean Electronics symposium in Cochi, India for which the Oceanic Engineering Society is technical co-sponsor.

INVITED TALKS:

[1] Ananya Sen Gupta, 'Signal processing challenges in physical environments: crossing the barrier of traditional assumptions', invited talk given on May 22, 2011 at Microsoft Research (Host: Rob Fatland)

[2] Ananya Sen Gupta, 'Signal processing challenges in physical environments: crossing the barrier of traditional assumptions', invited talk given on April 5, 2011 at Office of Naval Research (Host: John Tague)

[3] Ananya Sen Gupta, 'Signal processing challenges in physical environments: crossing the barrier of traditional assumptions', invited talk given on Feb 1, 2011 at Penn State, Applied Research Laboratory (Host: Dave Bradley)

[4] Ananya Sen Gupta, 'Signal processing for real environments: when traditional assumptions are violated', invited talk scheduled for Nov 5, 2010 at the University of Massachusetts, Dartmouth, Department of Electrical and Computer Engineering (Host: John Buck)

[5] Ananya Sen Gupta, 'A Sparse Sensing Approach to Shallow Water Acoustics', departmental seminar given on April 23, 2010 at the University of Delaware College of Earth, Ocean, and Environment (Host: Mohsen Badiey)

[6] Ananya Sen Gupta, 'A Geometric Approach to Signal Processing Problems', Colloquium talk given at Electrical Engineering department, University of Washington (Host: Eve Riskin) on 10/13/2009.

[7] Ananya Sen Gupta, 'Interference Suppression and Detection in Time-Varying and Non-linear Environments', given as the departmental seminar at the Department of Applied Ocean Physics and Engineering, Woods Hole Oceanographic Institution, Woods Hole, MA on 12/03/2008.

[8] Ananya Sen Gupta, 'A Structural Approach to Multi-user Interference Suppression', given as the Ocean Acoustics Lab seminar at the Department of Applied Ocean Physics and Engineering, Woods Hole Oceanographic Institution, Woods Hole, MA on 12/05/2007.

[9] Ananya Sen Gupta, 'A Structural Approach to Multi-user Interference Suppression', given at University of Washington on 11/20/2007 (Host: Mari Ostendorf)

Professional Affiliations: Tau Beta Pi (initiation in Fall 2006), IEEE, Acoustical Society of America.

PUBLICATIONS:

PUBLISHED JOURNAL ARTICLES:

[1] Ananya Sen Gupta, Andrew Singer, 'A structural approach to successive interference cancellation', IEEE Trans. Signal Processing, Dec 2007, Volume 55, number 12, pages 5716-5730.

[2] Ananya Sen Gupta, Andrew Singer, 'Interference suppression for multi-user systems with known memoryless non-linearity', IEEE Trans. Signal Processing, Volume 56, Issue 11, Nov. 2008 Page(s): 5589 - 5604.

[3] Ananya Sen Gupta, Jill Nelson, James Preisig, Andrew Singer, 'A Geometric Approach to Improve Interference Mitigation In Multi-user Detection and Equalization,' IEEE Transactions in Signal Processing, April 2011, Volume 59, number 4, 1694-1705.

[4] Ananya Sen Gupta, James Preisig, “A Geometric Mixed Norm Approach to Shallow Water Acoustic Channel Estimation and Tracking”, accepted with minor revisions to Elsevier Physical Communication Journal on July 2011. (Invited manuscript)

Publications continued in following pages.

JOURNAL MANUSCRIPTS IN PREPARATION:
[1]Ananya Sen Gupta, James Preisig, "Shallow water channel characterization under different environmental conditions", expect to submit to the Journal of the Acoustical Society of America by Nov. 2011.
[2]Ananya Sen Gupta, James Lynch, "Shallow water channel modeling under different environmental conditions", expect to submit to the Journal of the Acoustical Society of America Electronic Letters by Nov. 2011. (Title may change)

[3] Ananya Sen Gupta, Christopher Reddy, 'Topography Mapping: A Generalized Analytical Technique to Comprehensive Two-dimensional Gas Chromatography', manuscript getting ready for submission to Journal of Analytical Chemistry. Expect to submit by Oct 2011. (Two provisional patents on the content of this research are currently filed)

CONFERENCE ARTICLES:
Invited articles and abstracts:

[1] Ananya Sen Gupta, Andrew Singer, 'Multi-stage detection using constellation structure', Proc. Asilomar Conference in signals, systems and computers, Nov 2006, Pacific Grove, CA.

[2] Ananya Sen Gupta, 'Beats', abstract submitted as invited lecture and demonstration to the girl scouts in a special session sponsored by the technical committee on Education in the 159th Meeting Of The Acoustical Society Of America, Baltimore, MD, April 19-23, 2010.

[3] Ananya Sen Gupta, 'Amplification', abstract submitted as invited lecture and demonstration to the girl scouts in a special session sponsored by the technical committee on Education in the 159th Meeting Of The Acoustical Society Of America, Baltimore, MD, April 19-23,2010.

Contributed articles

[1] Weiwei Zhou, Jill Nelson, Ananya Sen Gupta,' Computationally Efficient Design of the MAE Equalizer for Binary Signaling', Proc. Asilomar Conf. on Signals, Systems and Computers, Pacific Grove, CA, Nov. 2011.

[2] Weiwei Zhou, Jill Nelson, Ananya Sen Gupta, 'Adaptive maximal asymptotic efficiency equalization using constellation mapping', submitted to Proc. of IEEE Signal Processing Society 14th DSP Workshop & 6th SPE Workshop, Enchantment Resort, Sedona, Arizona, USA, January 4-7, 2011

[3] Ananya Sen Gupta, James Preisig, 'Tracking the Time-varying Sparsity of Channel Coefficients in Shallow Water Acoustic Communications', Proc. Asilomar Conf. on Signals, Systems and Computers, Pacific Grove, CA, Nov. 7-10, 2010.

[4]Ananya Sen Gupta, 'Combining array processing and sparse sensing approaches to oceanography: methods and applications', Proc. Oceans 2010, Seattle, Sept. 20-23, 2010.

[5]Ananya Sen Gupta, James Preisig, 'A Geometric Mixed Norm Approach to Shallow Water Acoustic Channel Estimation', Proc. European Conference on Underwater Acoustics, Istanbul, Turkey, July 5-9, 2010.

[6] Ananya Sen Gupta, Andrew Singer, 'Maximal conditional efficiency successive interference cancellation', in Proc. ICASSP 2006.

[7] Ananya Sen Gupta, Andrew Singer, 'Successive interference annulment for multi-user systems with known non-linearity', in Proc. CISS 2006.

[8] Ananya Sen Gupta, Andrew Singer, ' Near far Resistant Multiuser Detector using Energy Contours', Proceedings of ICASSP, May 21-24, 2004.

[9] Ananya Sen Gupta, Andrew Singer, 'Linear Complexity Multiuser Detector using Successive Interference Cancellation', Proc. of Asilomar conference, Pacific Grove, CA, Nov. 9-12, 2003.

[10] Ananya Sen Gupta, Z.-P. Liang, 'Dynamic Imaging by Temporal Modeling using Principal Component Analysis', in Proc. ISMRM Annual Conference, Glasgow, April 21-27, 2001.
Please continue to next page for other publications and awards.

[11] Ananya Sen Gupta, 'Image Compression by Motion Vector Estimation', in Proc. IEEE (India) student paper contest, 1997. (This article won the best student paper award in the IEEE India chapter)

[12] Ananya Sen Gupta, 'A Conceptual Model for Intelligent and Adaptive Networks', in Proceedings of International Conference on CODEC (Computers and Devices for Communications), Science City, Calcutta, India, 1997.

OTHER PUBLICATIONS:
Invited article:
Ananya Sen Gupta, "Combining array processing and sparse optimization approaches in oceanography", Sea technology Magazine, April 2011.

Invited book chapter:
Ananya Sen Gupta, "A Sparse Sensing Approach to Sensor Arrays: Combining compressive sensing principles with array processing", invited book chapter in book titled "Sensor Arrays", InTech Open Access Publisher, 2011.

THESIS:
[1] Ananya Sen Gupta, 'Dynamic Imaging by Temporal Modeling using Principal Component Analysis', MS Thesis, Aug. 2001.
[2] Ananya Sen Gupta, 'A Structural Approach to Multi-user Detection', PhD Thesis, Dec 2006.

AWARDS AND HONORS:

1. Woods Hole Oceanographic Institution Postdoctoral Fellowship, granted by the Woods Hole Oceanographic Institution, Aug 2008-Feb.2010.

2. Sundaram Seshu summer fellowship, awarded by the Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, 2006.

3. Perry Fellowship, awarded by the Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, for the academic year 2004-2005.

4. Monibala Roy Memorial Gold Centered Silver Medal, awarded by Jadavpur University, Calcutta on 24th Dec., 1998 for best graduating woman in the College of Engineering .

5. IEEE student award for the best student paper in the IEEE M.V.Chauhan All-India Student Paper Contest in 1997.

State and national awards won in India for academic excellence in very competitive state and national level examinations:

6. Jagadis Bose National Science Talent Search National Scholarship (awarded to about 10 students in Indian universities every year), 1994-1998. This award includes a stipend, book grant and sponsored travel each year to different research institutes all over India.

7. Award of academic recognition from West Bengal Council of Higher Secondary Education for ranking twelfth (total of approximately 300,000 students) in Higher Secondary Examination, 1994 and other state awards.

8. Governor's Certificate of Appreciation for securing third position out of approximately 500,000 students in Madhyamik Pariksha (Secondary Examination : +10 level) in 1992.

9. West Bengal Board of Secondary Education's certificate of appreciation and scholarship for securing third position in Secondary Examination (+10 level) in 1992.

10. National Prize and Certificate of Merit in lieu of National Scholarship from the office of Director of Public Instruction, West Bengal for academic performance in the Higher Secondary Examination in 1994.

11. National Prize and Certificate of Merit in lieu of National Scholarship from the Office of the Deputy Director of Public Instruction for academic excellence in Secondary Examination (+10 level) in 1992.

12. Governor's Medal ('Rajyapal Padak'), prize and gift check from B.C.Roy Memorial Committee for outstanding academic performance in Madhyamik Pariksha (Secondary Examination : +10 level) in 1992.