

Curriculum Vitae

Ananya Sen Gupta
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EDUCATION

<i>Undergraduate Institution</i>	<i>Major</i>	<i>Degree and Year</i>
Jadavpur University,	Electronics and Telecom. Engineering,	Bachelor of Eng. (B.E.), 1998.

<i>Graduate Institution</i>	<i>Major</i>	<i>Degree and Year</i>
University of Illinois at Urbana-Champaign,	Electrical Engineering,	Master of Science, 2001.
University of Illinois at Urbana-Champaign,	Electrical Engineering,	Ph. D., 2006.

Brief Biography: Dr. Sen Gupta joined University of Iowa, Department of Electrical and Computer Engineering as Assistant Professor in 2013. She received her MS (2001) and PhD (2006) from University of Illinois at Urbana-Champaign. Prior to joining University of Iowa she spent five years (2008-2012) in Woods Hole Oceanographic Institution as postdoctoral scholar and researcher working in undersea signal processing and petroleum forensics. Dr. Sen Gupta's research interests lie in the nexus of signal processing, pattern recognition and knowledge discovery, with emphasis on applications to coastal environments and the Earth's Van Allen radiation belts. She seeks to develop geometric computational techniques that enable sophisticated representation, localization, tracking, and classification of environmental processes. Her algorithms have been applied to shallow water acoustic communications, fingerprinting oil spills, sonar target recognition in high-clutter coastal environments as well as tracking high-energy plasmospheric events on Earth and Mars.

Dr. Sen Gupta is a Technical Committee member in IEEE Ocean Engineering Society and guest editor of IEEE Journal of Oceanic Engineering Special Issue in "Underwater Acoustic Propagation Physics and Signal Processing Techniques for Shallow Water Acoustic Communications". She currently leads a research team of graduate and undergraduate students, several of whom have received multiple student research awards under her mentorship. Her research for her Iowa EPSCoR project was recently featured in the ISGC 2015-2016 STIMULI EPsCOR report distributed to Congress and she has also received a teaching award in 2015. Since joining University of Iowa as Assistant Professor in Fall 2013, Dr. Sen Gupta has mentored to completion one PhD thesis, two MS thesis, and one honors thesis.

Positions, Service and Honors

Positions and Employment

2013-present	Assistant Professor, Dept. of Electrical and Computer Engineering, University of Iowa
2012 – 2013	Visiting Assistant Professor, Dept. of Electrical and Computer Engineering, University of Iowa
2012-2013	Visiting Investigator, Woods Hole Oceanographic Institution
2011	Part-time lecturer, University of Massachusetts at Dartmouth

2010-2011 Postdoctoral investigator, Woods Hole Oceanographic Institution
 2008-2010 Postdoctoral scholar, Woods Hole Oceanographic Institution
 2008 Post doctoral research associate and lecturer, University of Illinois at Urbana-Champaign
 2007-2008 Program Manager, Microsoft Corporation
 2001- 2006 Graduate Assistant, Dept. of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign
 2001 (Summer) Software developer internship, Philips Semiconductor, Hoffman Estates, IL
 1999-2001 Graduate Assistant, Dept. of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign
 1998-1999 Software engineer, DAIS Infotech, Kolkata, India

Other Professional Experience: Service, Leadership, Invited talks, etc.

Professional service to IEEE and ASA communities and federal agencies

2016-Present IEEE Ocean Engineering Society, Technical Committee member, Co-chair for the Numerical Modeling, Simulation, and Data Visualization technology committee, IEEE Ocean Engineering Society
 2017-2019 Guest Editor: IEEE Journal of Oceanic Engineering, Special Issue in Underwater Acoustic Propagation Physics and Signal Processing Techniques for Shallow Water Acoustic Communications, scheduled publication date: Jan 2019
 2017 Session Chair in two sessions in sonar and underwater acoustic communications: IEEE Oceans Conference, Anchorage, Sept 2017.
 2016 Invited speaker of the special session on “Compressive Sensing in Acoustics” in the Acoustical Society of America (ASA) Honolulu meeting, Nov 2016.
 2015 Served as expert in signal processing in review panel of National Science Foundation (CISE program)
 2011 Co-chair and co-organizer of the special session on “Environmental challenges to acoustic tracking” in the Acoustical Society of America (ASA) San Diego meeting, Nov 2011 meeting.
 2010-Present Reviewer for Journal of Acoustical Society of America and IEEE Journal of Oceanic Engineering
 2008 Guest lecturer, Massachusetts Institute of Technology

Outreach service outside my academic institution

2012-2013 Mentor, Technovation Challenge, outreach program organized by Irridescent, a non-profit organization with focus on bringing more women into STEM fields
 2015 Served as Judge, 56th Eastern Iowa Science & Engineering Fair (EISEF)
 2014 Guest lecture at Lincoln Elementary School
 2013 Guest lecture at James Madison High School in Brooklyn, NY
 2010 Invited lecture and demonstration of simple educative acoustic experiments for girl scouts in ASA Baltimore meeting, April 2010.

Academic Service and Outreach within my academic institution

2017 Invited faculty presenter at Explore Engineering @ Iowa
 2017 Faculty panelist in Hawkeye Lunch and Learn with Women in Technology

- 2015 Served in faculty panel for orientation for new students in College of Engineering, University of Iowa
- 2014 Served on CoE faculty panel to prospective students and families
- 2013 Served in discussion panel to college of engineering freshmen
- 2013-Present Committee member, ABET Committee, Dept. of Electrical and Computer Engineering, University of Iowa

Professional membership

- 2011- Present Member, Acoustic Society of America (co-chaired ASA session in Fall 2013), invited speaker in ASA Salt Lake City meeting, June 2016

(with gaps)

- 1997 – Present IEEE Member (also member of IEEE Ocean Engineering Society)
- (with gaps)

Honors

Awards directly given to Dr. Sen Gupta

- 2015: NASA Iowa EPSCoR research award (details under non-federal grants)
- 2015-2016 Honorable mention: Dr. Sen Gupta's EPSCoR project was selected from all Iowa EPSCoR projects in the three-year RID program to be featured in ISGC 2015-2016 STIMULI EPSCoR book distributed to Congress.
- 2015 Teaching award: Excellence in Teaching and Dedication to Student Learning, Dec 2015.
- 2014 Old Gold Summer Fellowship, College of Engineering University of Iowa
- 2011-2012 Interdisciplinary Research Award, Woods Hole Oceanographic Institution
- 2008-2010 Postdoctoral Scholarship, Woods Hole Oceanographic Institution
- 2006 Sundaram Seshu Fellowship, University of Illinois at Urbana-Champaign
- 2004 Perry Fellowship, University of Illinois at Urbana-Champaign
- 1998 Monibala Roy Memorial Award by Jadavpur University, Kolkata, India
- 1994 Jagadis Bose National Science Talent Search (JBNSTS) scholarship, India
- 1994 State honors bestowed by West Bengal Council of Higher Secondary Education for academic excellence in state-wide public examinations in West Bengal, India
- 1992 Governor's medal and other state awards bestowed by West Bengal Board of Secondary Education for academic excellence in state-wide public examinations in West Bengal, India

Awards received by students for doing research under my mentorship

- 2017 University of Iowa, Student Employee of the Year (Science), Rachel Brufflodt
- 2017- 2018 Iowa Space Grant Consortium undergraduate research scholarship, awarded to Mirela Kapo
- 2017- 2018 Iowa Space Grant Consortium undergraduate research scholarship, awarded to Robin Howk
- 2016-2017 Iowa Space Grant Consortium undergraduate research scholarship, awarded to Emma Hawk
- 2016-2017 Iowa Center for Research for Undergraduates research scholarship, awarded to Emma Hawk
- 2016 University of Iowa, College of Engineering, Outstanding Student Research award, Emma Hawk

Selected Publications

Peer-reviewed full-length journal and conference articles

Ananya Sen Gupta, Craig Kletzing, William Kurth, Morgan Matheny, “Automated Identification and Shape Analysis of Chorus Elements in the Van Allen Radiation Belts”, to appear in AGU Journal of Geophysical Research, Space Physics, 2018.

Naushad Ansari, Ananya Sen Gupta, Anubha Gupta, “Shallow Water Channel Estimation with Energy Efficient Transmitted Signal Design”, currently under review in IEEE Journal of Oceanic Engineering.

Hamidreza Ghasemi Damavandi, Ananya Sen Gupta, Robert Nelson, Christopher Reddy, “Interpreting comprehensive two-dimensional gas chromatography using peak topography maps with application to petroleum forensics”, Chemistry Central Journal 10 (1), 75, 2016.

Naushad Ansari, Anubha Gupta, Ananya Sen Gupta, “Shallow water acoustic channel estimation using two-dimensional frequency characterization”, the Journal of the Acoustical Society of America (JASA) 140 (5), 3995-4009, 2016.

Daniel Schupp-Omid, Ananya Sen Gupta, Ivars Kirsteins, “Characterization and Classification of Sonar Targets Using Ellipsoid Features”, Proc. Global SIP, Orlando Dec. 14-16, 2015.

Naushad Ansari, Anubha Gupta, Ananya Sen Gupta, “Physics Inspired CS based Underwater Acoustic Channel Estimation”, Proc. Global SIP, Orlando Dec. 14-16, 2015.

Ananya Sen Gupta, James Preisig, “A Geometric Mixed Norm Approach to Shallow Water Acoustic Channel Estimation and Tracking,” Elsevier Physical Communication Journal, Special Issue on “Compressive Sensing in Communications,” **Error! Hyperlink reference not valid.**, June 2012, Pages 119–128.

Ananya Sen Gupta and J. Preisig, “Adaptive sparse optimization for coherent and quasi-stationary problems using context-based constraints,” in Proc. ICASSP , (Kyoto, Japan), March 2012.

Ananya Sen Gupta, Jill Nelson, James Preisig, Andrew Singer, 'A Geometric Approach to Improve Interference Mitigation In Multi-user Detection and Equalization,' IEEE Trans. Sig. Proc., April 2011 Volume 59, number 4, 1694-1705.

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

Ananya Sen Gupta, Andrew Singer, 'A structural approach to successive interference cancellation,' IEEE Trans. Sig. Proc., Dec 2007, Volume 55, number 12, pages 5716-5730.

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

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

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

Other (abstract-reviewed) recent publications

Ananya Sen Gupta, Ivars Kirsteins, "Disentangling Sonar Target Features Using Braided Feature Graphs", IEEE Oceans Conference, Anchorage, September 18-21, 2017.

Rachel Brufloft, Ananya Sen Gupta, et al, "Fingerprinting the Refugio oil spill using Topographic Signal Processing of Two-Dimensional Gas Chromatographic images", IEEE Oceans Conference, Anchorage, September 18-21, 2017.

Emma Hawk, Ananya Sen Gupta, "Shallow Water Acoustic Channel Estimation using Dynamic Constrained Mixed Norm Optimization" IEEE Oceans Conference, Aberdeen, June 19-22, 2017.

Nausad Ansari, Ananya Sen Gupta, Anubha Gupta, "Underwater Acoustic Channel Estimation via CS with Prior Information", IEEE Oceans Conference, Aberdeen, June 19-22, 2017.

Ananya Sen Gupta, "Combining sparse recovery approaches with underwater acoustic channel models for robust communications in the shallow water paradigm", JASA 141 (5), 3987-3987.

Ananya Sen Gupta, "Shallow water acoustic channel estimation across fluctuations in channel support", JASA 140 (4), 3055-3055.

Ghasemi-Damavandi, H., Sen Gupta, A., Nelson R., Reddy C., "Signal Variability and Data Compression Considerations for Petroleum Forensics in Two-dimensional Gas Chromatography", IEEE Oceans Conference, Aberdeen, June 19-22, 2017.

Ghasemi-Damavandi, H., Sen Gupta, A., Nelson R., Reddy C., "Compressed Forensic Source Image Using Source Pattern Map", Proc. Data Compression Conference, Snowbird, UT, April 2016.

Ananya Sen Gupta, Daniel Schupp, Ivars Kirsteins, "Dynamic target identification and classification based on resonance topography grouping", Proc. Asilomar Conference on Signals, Systems, and Computers, Nov. 2014, 1905-1908.