Arindam **Bose**

PhD Candidate · Signal Processing Researcher

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- Currently a Ph.D. candidate at Electrical and Computer Engineering Department, University of Illinois at Chicago and a research assistant at WaveOPT lab under Prof. Mojtaba Soltanalian.
- Interested in devising a better problem-solving method for challenging tasks, and learning new technologies.

Research Interests

Statistical signal processing, optimization theory, machine learning, active sensing, and radar signal processing

Work Experiences

University of Illinois at Chicago
Chicago, IL, USA

RESEARCH ASSISTANT, WAVEOPT LAB, DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
Jul. 2016 - Present

- Developing non-convex optimization algorithms for waveform synthesis for active sensing systems
- Assisting and collaborating with Dr. M. Soltanalian in signal processing and optimization theory research and working towards PhD thesis

TEACHING ASSISTANT, DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING AND DEPARTMENT OF PHYSICS
Aug. 2015 - Present

- Courses assisted: Digital signal processing, Statistical signal processing, Image analysis and computer vision, Introductory physics, General physics
- Collaborated with several professors to setup exam questions and answers
- Graded papers, conducted lab sessions, and proctored examinations

RESEARCH ASSISTANT, MACHINE VISION LAB, DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
Jan. 2015 - Jun. 2016

- Implemented and analysed multidimensional indexing algorithms for Human Activity Recognition (HAR) using Recognition based on Indexing and Sequencing (RISq) and produced significant increase in recognition efficieny than other algorithms such as DTW
- Assisted and collaborated with Dr. Jezekiel Ben-Arie in the research of optimization vitae of various algorithms of Activity Recognition using Microsoft Kinect

KMB Telematics Inc.
Arlington, VA, USA

SENIOR RESEARCH INTERN, RADAR SIGNAL PROCESSING TEAM
May 2019 - Aug. 2019

- Conducted a radar literature review to understand what is the current state-of-the-art and what are the best current practices when it comes to high-resolution radar
- Simulated a radar system is the first step in understanding how the real, physical system is going to perform, when compared to the theoretical findings
- Developed sophisticated algorithms for antenna array designing for automotive MIMO radar

Mitsubishi Electric Research Laboratories
Cambridge, MA, USA

SUMMER INTERN, SIGNAL PROCESSING GROUP
May 2018 - Aug. 2018

- Developed efficient algorithms for Time-Domain Spectroscopy systems using THz

Cognizant Technology Solutions Pvt. Ltd.
Kolkata, India

PROGRAMMER ANALYST, HEALTH CARE PRACTICE
Aug. 2014 - Apr. 2016

- Developed and maintained several Java based web projects according to client requests
- Designed web services and complex web pages in JSP, HTML, CSS, and JavaScript
- Maintained PI and other health related client data in complex Oracle databases
- Developed and delivered special projects: Log Parser – a log management system for complex bug reports, PBMAid - an android app to track insurance related data for patients

Education

University of Illinois at Chicago
Chicago, IL, USA

PH.D. IN ELECTRICAL ENGINEERING
2016 - Expecting 2020

- Waveform synthesis for active sensing with emerging applications (Advisor: Dr. Mojtaba Soltanalian)

West Bengal University of Technology
Kolkata, India

B.TECH. IN ELECTRONICS AND COMMUNICATION ENGINEERING
2008 - 2012

- Thesis topic: Efficient algorithms for digital watermarking (Advisor: Dr. Somnath Maiti)

Publications

Designing Signals with Good Correlation and Distribution Properties *Calgary, AB, Canada*

A. Bose, N. Mohammadi, M. Soltanalian *Apr. 2018*

- Presented in IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2018

Efficient Construction of Polyphase Sequences With Optimal Peak Sidelobe Level Growth *Montreal, QC, Canada*

A. Bose, M. Soltanalian *Nov. 2017*

- Presented in IEEE Global Conference on Signal and Information Processing (GlobalSIP) 2017

Non-Convex Shredded Signal Reconstruction via Sparsity Enhancement *New Orleans, LA, USA*

A. Bose, M. Soltanalian *Mar. 2017*

- Presented in IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2017

Enhanced Data Hiding Method Using DWT Based on Saliency Model *Solan, India*

C. Agarwal, A. Bose, S. Maiti, N. Islam, S. K. Sarkar *Sep. 2013*

- Presented in IEEE International Conference on Signal Processing, Computing and Control (ISPCC) 2013

Technical Documents

Robust Data Hiding Technique in Wavelet Domain Using Saliency Map

S. Maiti, C. Agarwal, A. Bose, S. K. Sarkar *2013*

- Published in International Journal of Advances in Engineering and Technology (IJAET), Volume 6, Issue 4, August – September 2013

An Improved Method of Pre–Filter Based Image Watermarking in DWT Domain

S. Maiti, A. Bose, C. Agarwal, S. K. Sarkar, N. Islam *2013*

- Published in International Journal of Computer Science and Technology (IJCST), Volume 4, Issue 1, January – March 2013

Face Detection and Tracking System

S. Sarkar, A. Bose *2012*

- Published in nternational Journal of Scientific and Engineering Research (IJSER), Volume 3, Issue 10, October – 2012.

Helianthus - a Low Cost High Efficient Solar Tracking System Using AVR Microcontroller

A. Bose, S. Sarkar, S. Das *2012*

- Published in International Journal of Scientific and Engineering Research (IJSER), Volume 3, Issue 10, October – 2012

Mathematical Time Domain Study of Negative Feedback System Using Limiting Progression

A. Bose *2012*

- Published in International Journal of Scientific and Engineering Research (IJSER), Volume 3, Issue 9, September – 2012

Book Chapter

Deep Learning Neural Networks Design and Case Studies

Author: Daniel Graupe *2016*

- Contribution: "Case study – Activity Recognition" appeared in chapter 8 and appendices
- Published by World Scientific Publishing Company, 2016

Presentations

Invited Talks

2019 IEEE Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA, USA *Nov. 2019*

Conference Presentations

2019 IEEE Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA, USA *Nov. 2019*

2019 IEEE Data Science Workshop (DSW), Minneapolis, MN, USA *Jun. 2019*

2017 IEEE Global Conference on Signal and Information Processing (GlobalSIP), Montreal, QC, Canada *Nov. 2017*

Poster Presentations

2018 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Calgary, AB, Canada *Apr. 2018*

2017 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), New Orleans, LA, USA *Mar. 2017*

Teaching Experiences

Teaching Assistant, University of Illinois at Chicago

Digital Signal Processing I, Department of ECE   *Spring 2017*
Digital Signal Processing II, Department of ECE   *Fall 2016, 2017, 2018*
Statistical Signal Processing, Department of ECE   *Spring 2018, 2019, 2020*
Image Analysis and Computer vision, Department of ECE   *Fall 2015*
Introductory Physics, Department of Physics   *Spring 2016*
General Physics, Department of Physics   *Spring 2016*

Awards

Signal Processing Society Chicago Chapter Appreciation, IEEE   *Dec. 2019*
Associate of the Month, Cognizant Technology Solutions   *May 2014*
Winner, INFOCOM 10-11, The Telegraph Knowhow and National Council of Science Museums   *Jan. 2011*
Educational Scholarship, The Central Government of India   *2008 – 2012*

Memberships

Signal Processing Society, IEEE
Student Member, Siam

Academic Services

2018-2019	**Journal Article Referee**, IEEE Transaction of Signal Processing, Elsevier Signal Processing	
2018-2019	**Conference Paper Referee**, IEEE VTC 2018, EUSIPCO 2019, IEEE SAM 2020	
Apr. 2019	**YP Chair Chicago Chapter**, IEEE Signal Processing Society	*Chicago, USA*
Aug. 2016	**Vice President**, UIC ECE Journal Club	*Chicago, USA*
2010-2011	**Chief Robotics Coordinator**, Future Institute of Engineering and Management	*Kolkata, India*