

Arindam Bose

PHD CANDIDATE · SIGNAL PROCESSING RESEARCHER

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- Currently a PhD 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, radar signal processing, optimization theory, machine learning, and active sensing.

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 solutions
- 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 efficiency than other algorithms such as DTW
- Assisted and collaborated with Dr. Jezekiel Ben-Arie in the research of optimization 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. 2020

- Developed sophisticated algorithms for antenna array designing for automotive MIMO radar
- Developed systems and algorithms for automotive radar imaging

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

Apr. 2013 - Jul. 2014

- 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

PHD 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)

JOURNAL PAPERS

Waveform Design for Mutual Interference Mitigation in Automotive Radar

A. BOSE, B. TANG, W. HUANG, M. SOLTANALIAN, AND J. LI

2020

- Submitted in IEEE Transactions on Signal Processing

Efficient Waveform Covariance Matrix Design and Antenna Selection for MIMO Radar

A. BOSE, S. KHOBAHI, AND M. SOLTANALIAN

2020

- Submitted in Elsevier Journal of Signal Processing

One-Bit Radar Processing With Time-Varying Sampling Thresholds

A. AMERI, A. BOSE, J. LI, AND M. SOLTANALIAN

2019

- Published in IEEE Transactions on Signal Processing
- Appeared on the IEEE TSP Popular Articles list

Constructing Binary Sequences With Good Correlation Properties: An Efficient Analytical-Computational Interplay

A. BOSE, M. SOLTANALIAN

2018

- Published in IEEE Transactions on Signal Processing

CONFERENCE PRESENTATIONS

Limits of Transmit Beamforming for Massive MIMO Radar

Pacific Grove, CA, USA

A. BOSE, A. GHOURI, AND M. SOLTANALIAN

Nov. 2020

- Accepted in IEEE Asilomar Conference on Signals, Systems, and Computers 2020

Deep One-Bit Compressive Autoencoder

Taipei, Taiwan

S. KHOBAHI, A. BOSE, AND M. SOLTANALIAN

Dec. 2020

- Submitted in IEEE Global Communications Conference (GLOBECOM) 2020

Deep-URL: A Model-Aware Approach to Blind Deconvolution Based on Deep Unfolded Richardson-Lucy Network

Abu Dhabi, UAE

C. AGARWAL, S. KHOBAHI, A. BOSE, M. SOLTANALIAN, AND D. SCHONFELD

Oct. 2020

- Presented in IEEE International Conference on Image Processing (ICIP) 2020

Deep Radar Waveform Design for Efficient Automotive Radar Sensing

Hangzhou, China

S. KHOBAHI, A. BOSE, AND M. SOLTANALIAN

Jun. 2020

- Presented in IEEE Sensor Array and Multichannel Signal Processing Workshop (SAM) 2020

Joint Optimization of Waveform Covariance Matrix and Antenna Selection for MIMO Radar

Pacific Grove, CA, USA

A. BOSE, S. KHOBAHI, AND M. SOLTANALIAN

Nov. 2019

- Presented in IEEE Asilomar Conference on Signals, Systems, and Computers 2019

Waveform Design for One-Bit Radar Systems Under Uncertain Interference Statistics

Pacific Grove, CA, USA

A. AMERI, A. BOSE, AND M. SOLTANALIAN

Nov. 2019

- Presented in IEEE Asilomar Conference on Signals, Systems, and Computers 2019

Learning-Based Shadow Mitigation for Terahertz Multi-Layer Imaging

Paris, France

P. WANG, T. KOIKE-AKINO, A. BOSE, R. MA, P. ORLIK, W. TSUJITA, K. SADAMOTO, H. TSUTADA, AND M. SOLTANALIAN

Sep. 2019

- Presented in IEEE International Conference on Infrared, Millimeter, and Terahertz Waves (IRMMW-THz) 2019

THz Multi-Layer Imaging Via Nonlinear Inverse Scattering

Paris, France

A. BOSE, A. KADU, H. MANSOUR, P. WANG, P. BOUFONOS, P. ORLIK, AND M. SOLTANALIAN

Sep. 2019

- Presented in IEEE International Conference on Infrared, Millimeter, and Terahertz Waves (IRMMW-THz) 2019

Comprehensive Personalized Ranking Using One-Bit Comparison Data

Minneapolis, MN, USA

A. AMERI, A. BOSE, AND M. SOLTANALIAN

Jun. 2019

- Presented in IEEE Data Science Workshop (DSW) 2019

Design of Unimodular Sequence Sets with Good Correlation and Complementary Correlation Properties

Anaheim, CA, USA

I. A. ARRIAGA-TREJO, A. BOSE, A. G. OROZCO-LUGO, AND M. SOLTANALIAN

Nov. 2018

- Presented in IEEE Global Conference on Signal and Information Processing (GlobalSIP) 2018

Generalized Cyclic Algorithms for Designing Unimodular Sequence Sets with Good (Complementary) Correlation Properties

Sheffield, UK

A. BOSE, I. A. ARRIAGA-TREJO, A. G. OROZCO-LUGO, AND M. SOLTANALIAN

Jul. 2018

- Presented in IEEE Sensor Array and Multichannel Signal Processing Workshop (SAM) 2018

Low-Rank Matrix Recovery from One-Bit Comparison Information

Calgary, AB, Canada

A. BOSE, A. AMERI, M. KLUG, M. SOLTANALIAN

Apr. 2018

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

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 International 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

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

Academic Services

2018-2019	Conference Reviewer , IEEE VTC 2018, EUSIPCO 2019, IEEE SAM 2020	
2018-2019	Journal Reviewer , IEEE Transaction of Signal Processing, Elsevier Journal of Signal Processing, IET Signal Processing, IEEE Transactions on Aerospace & Electronic Systems	
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