Arindam **Bose**

PhD Candidate · Signal Processing Researcher

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Summary

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. Research interests include signal processing and optimization theory, radar signal processing, active sensing, and theory of machine learning. Interested in devising a better problem-solving method for challenging tasks, and learning new technologies.

Work Experience

KMB Telematics Inc. *Arlington, VA, USA*

Senior Research Intern, Radar Signal Processing Team *May 2019 - Aug. 2020*

- Developed efficient algorithms for designing antennas for FMCW automotive radar

Mitsubishi Electric Research Laboratories *Cambridge, MA, USA*

Summer Intern, Terahertz Imaging Lab *May 2018 - Aug. 2018*

- Developed several efficient model based and machine learning algorithms for Time-Domain Spectroscopy systems using THz

University of Illinois at Chicago *Chicago, IL, USA*

Research Assistant, WaveOPT lab, Department of Electrical and Computer Engineering *Jul. 2016 - PRESENT*

- Developing several non-convex optimization algorithms for waveform design for smart 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

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

Major Publications

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 IEEE Transactions on Aerospace and Electronic Systems

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

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. Ghauri, and M. Soltanalian — *Nov. 2020*

- Accepted in IEEE Asilomar Conference on Signals, Systems, and Computers 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. Boufounos, 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 6th IEEE Global Conference on Signal and Information Processing (GlobalSIP) 2018, November 2018

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

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

- Presenting in 43rd IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), April 2018

Education

University of Illinois at Chicago — *Chicago, IL, USA*

PhD in Electrical Engineering — *2016 - 2020*

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

Skills

Programming Language	MATLAB, Python, C, C++, Java
Libraries	PyTorch, OpenCV
Web Designing	JavaScript, CSS 3, HTML 5, JSP, JQuerry, PHP
Database Management System	Oracle RDBMS, MySQL, PL/SQL, SQLite
Language	English, Hindi, Bengali