Zhibin Zou

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Education

University at Albany, State University at New York   *Albany, NY, USA*
Ph.D. in Electrical and Computer Engineering (GPA 4.0/4.0)   Sep. 2019 - Present
- Advised by Weifu Wang in Robotics from Sep. 2019 - June. 2021
- Advised by Aveek Dutta in Wireless Communication from June. 2021 - Present
- Selected Courses: Advanced Digital Communication, Modern Wireless Network, Machine Learning and Information Theory, Probability and Random Process, Digital Signal Processing, Statistical Signal Processing, Engineering Optimization, Parameter Estimation and Signal Detection Theory, Discrete Mathematics with Applications, Cyber-Physical Systems, Linear Control Theory, Robotics.

Xidian University   *Xi'An, China*
Master of Signal and Information Processing (GPA: 3.75/4.0)   Sep. 2016 - Jun. 2019

Xidian University   *Xi'An, China*
Bachelor of Electrical and Computer Engineering (GPA: 3.35/4.0)   Sep. 2012 - Jun. 2016

Publications

My research focuses on waveform design, precoding and modulation for next-generation wireless communications. I have strong knowledge of MIMO, OFDM, OTFS, channel decomposition, interference cancellation, delay-Doppler domain analysis and machine learning techniques.

Journals

[1] **Z Zou**, A Dutta. "Multi-dimensional Eigenwave Multiplexing (MEM): A General Modulation Beyond OTFS, " *IEEE Transactions on Communications (TCOM)* (Under Review)

[2] **Z Zou**, A Dutta. "Waveforms for xG Non-Stationary Channels, " arXiv:2301.00454

[3] **Z Zou**, M Careem, A Dutta, N Thawdar. "Joint Spatio-Temporal Precoding for Practical Non-Stationary Wireless Channels, " *IEEE Transactions on Communications (TCOM)*, vol. 71, no. 4, pp. 2396 - 2409, 2023

[4] **Z Zou**. "Optimizing towards the best insertion-based error-tolerating joints," arXiv:2209.15147

[5] **Z Zou**, L Song, X Cheng. "Labeled box-particle CPHD filter for multiple extended targets tracking," *Journal of Systems Engineering and Electronics*, vol. 30, no.1, pp. 57-67, 2019

[6] X Cheng, L Song, H Ji, **Z Zou**. "Group target tracking algorithm based on labeled box particle probability hypothesis density ," *Systems Engineering and Electronics*, vol. 41, no.8, pp. 1677-1685. 2019

Conferences

[1] I Amarasekara, **Z Zou**, A Dutta. "Adaptive Neural Network for Deconstructing Multi-dimensional Channel Kernels," *in Proc. IEEE Vehicular Technology Conference (VTC), 2024*, to appear

[2] **Z Zou**, I Amarasekara, A Dutta. "Learning to Decompose Asymmetric Channel Kernels for Generalized Eigenwave Multiplexing," *in Proc. IEEE INFOCOM 2024*, to appear (Acceptance rate $\approx 19.5\%$)

[3] **Z Zou**, A Dutta. "Multidimensional Eigenwave Multiplexing Modulation for Non-stationary Channels," *in Proc. IEEE Global Communications Conference (GLOBECOM), 2023*

[4] **Z Zou**, A Dutta. "Capacity Achieving by Diagonal Permutation for MU-MIMO channels," *in Proc. IEEE Global Communications Conference (GLOBECOM), 2023*

[5] **Z Zou**, X Wei, D Saha, A Dutta, G Hellbourg. "SCISRS: Signal Cancellation using Intelligent Surfaces for Radio Astronomy Services," *in Proc. IEEE Global Communications Conference (GLOBECOM), 2022*

[6] **Z Zou**, M Careem, A Dutta, N Thawdar. "Unified Characterization and Precoding for Non-Stationary Channels," *in Proc. IEEE International Conference on Communications (ICC), 2022* [**Best Paper Award**] (Award rate $\approx 0.64\%$)

[7] X Cheng, L Song, **Z Zou**. "Multiple group target tracking with evolving networks and labeled box particle PHD filter," *in Proc. 30th Chinese Control And Decision Conference (CCDC), 2018*

[8] **Z Zou**, L Song, X Cheng. "Labeled box-particle PHD filter for multi-target tracking," *in Proc. IEEE International Conference on Computer and Communications (ICCC), 2017*

Patents

[1] L Song, Y Pan, **Z Zou**, et al. "Passive Box-particle PHD multi-target tracking based on TDOA," *CN Patent*, Application Number 201810825869.8, Patent Number CN108981707B

[2] L Song, H Cent, Y Pan, P Yang, **Z Zou**, et al. "A evaluation for the multple group and extended target ellipse shape estimation," *CN Patent*, Application Number 201811640647.5, Patent Number CN109683150B

Awards and Honors

Jun. 2022	**Young Gladiator**: "Funded by Institute for the Wireless Internet of Things at Northeastern University"
May. 2022	**Best Paper Award, IEEE ICC**: "IEEE ICC is the flagship conference of IEEE ComSoc"
Sep. 2020	**Granted Chinese Patents**: "Patents CN 108981707B and CN109683150B are granted"
Nov. 2018	**National Scholarship, China**: "Highest level scholarship for students in China"
Dec. 2017	**Excellent Graduate Student, Xidian University**
Nov. 2017	**National Scholarship, China**: "Highest level scholarship for students in China"

Experience

Research Assistant

MESA Lab, University at Albany, SUNY   2021-Present

Research focuses on MIMO/OFDM/OTFS, Precoding, Modulation, Channel Decomposition, Interference Cancellation, RIS, Machine Learning

Research Assistant

Weifu Wang's Lab, University at Albany, SUNY   2019-2021

Research focuses on Robotics, Block Optimization

Research Assistant

Liping Song's Lab, Xidian University   2016-2019

Research focuses on Target Tracking, Random Finite Sets Theory, Box-Particle Filter

Service and Activities

- Invited to present my work at the Special Technical Session in IEEE ICC 2022
- Assisted in preparing the funded project NSF SWIFT #2229496 ($634,799.00)
- Reviewer of IEEE Transactions on Neural Networks and Learning Systems, IEEE Transactions on Aerospace and Electronic Systems, Computational Intelligence and Neuroscience, Wireless Communications and Mobile Computing, Frontiers in Energy Research, Frontiers in Neurorobotics, IEEE ICC, IEEE GLOBECOM, and IEEE IROS
- Student Member of IEEE, IEEE ComSoc, ACM

Skills

Expertise	MIMO, OFDM, Deep Learning [Certificate], Channel Decomposition, Interference Cancellation, Precoding, Signal Processing, Equalization, Target Tracking
Instrument Skills	Raspberry Pi, Software Defined Radios (SDR), Blender
Programming	Matlab, Python , Julia
Languages	English, Chinese (Native)

References

- Prof. Aveek Dutta
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- Prof. Dola Saha
  Assistant Professor, University at Albany SUNY, Albany, NY, USA
  ☎ +1(303)638-3752   ✉ dsaha@albany.edu