

ZHIYANG WANG

CONTACT

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RESEARCH INTERESTS

My research is focused on on the theoretical analyses of the limits of large graph neural networks as manifold neural networks and their applications on wireless networks as well as point cloud analysis.

EDUCATION

University of Pennsylvania

Ph.D. candidate in Electrical Engineering
The Dean's Fellowship recipient
The Bruce Ford Memorial Fellowship recipient

2019-Present

Advisor: Prof. Alejandro Ribeiro

Pennsylvania State University

Visiting Scholar in Electrical Engineering

Jul. 2018 - Dec. 2018

Advisor: Prof. Jing Yang

University of Science and Technology of China

Master in Electrical Engineering
Bachelor in Electrical Engineering

2012-2019

Advisor: Prof. Cong Shen

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WORK EXPERIENCE

Mitsubishi Electric Research Laboratories

Research Intern

Jun 2023 - Aug 2023

TEACHING EXPERIENCE

University of Pennsylvania

Teaching Assistant

ESE 680-003, Graph Neural Networks

Fall 2020

ESE 224, Signal and Information Processing

Spring 2021

University of Science and Technology of China

Teaching Assistant

C programming

Spring 2015

MIMO wireless communications course

Fall 2017

PULICATIONS

Journal:

Z. Wang, L. Ruiz and A. Ribeiro, "Geometric Graph Filters and Neural Networks: Limit Properties and Discriminability Trade-offs," submitted to IEEE Transactions on Signal Processing.

C. Battiloro, **Z. Wang**, H. Riess, P. Di Lorenzo and A. Ribeiro, "Tangent Bundle Convolutional Learning: from Manifolds to Cellular Sheaves and Back", submitted to IEEE Transactions on Signal Processing.

A. Parada-Mayorga, **Z. Wang** and A. Ribeiro, “Graphon Pooling for Reducing Dimensionality of Signals and Convolutional Operators on Graphs”, submitted to IEEE Transactions on Signal Processing.

Z. Wang, L. Ruiz and A. Ribeiro, “Stability to Deformations of Manifold Filters and Manifold Neural Networks”, submitted to IEEE Transactions on Signal Processing.

A. Parada-Mayorga, **Z. Wang**, F. Gama and A. Ribeiro, “Stability of Aggregation Graph Neural Networks”, submitted to IEEE Transactions on Signal and Information Processing over Networks.

Z. Wang, M. Eisen and A. Ribeiro, “Learning Decentralized Wireless Resource Allocations with Graph Neural Networks”, IEEE Transactions on Signal Processing 70 (2022): 1850-1863.

Z. Wang, R. Zhou, and C. Shen, “Regional Multi-Armed Bandits with Partial Informativeness”, IEEE Trans. Signal Process., Volume: 66, Issue: 21, Page(s): 5705-5717, Nov. 2018

Z. Wang and C. Shen, “Small Cell Transmit Power Assignment Based on Correlated Bandit Learning”, IEEE Journal on Selected Areas in Communications, Vol. 35, No. 5, Page(s): 1030-1045, May 2017.

Conference:

C. Battiloro, **Z. Wang**, H. Riess, P. Di Lorenzo and A. Ribeiro, “Tangent Bundle Filters and Neural Networks: from Manifolds to Cellular Sheaves and Back”, In ICASSP 2023-2023 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) (pp. 1-5). IEEE.

Z. Wang, L. Ruiz and A. Ribeiro, “Convolutional Filtering on Sampled Manifolds”, In ICASSP 2023-2023 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) (pp. 1-5).

Z. Wang, L. Ruiz and A. Ribeiro, “Convolutional Neural Networks on Manifolds: From Graphs and Back”, in 2022 56th Asilomar Conference on Signals, Systems, and Computers. IEEE, 2022, pp.356–360.

Z. Wang, L. Ruiz and A. Ribeiro, “Convolutional neural networks on manifolds: From graphs and back,” in NeurIPS 2022 Workshop: New Frontiers in Graph Learning.

Z. Wang, L. Ruiz and A. Ribeiro, “Stability of Neural Networks on Manifolds to Relative Perturbations”, In ICASSP 2022-2022 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) (pp. 5473-5477). IEEE.

Z. Wang, L. Ruiz, M. Eisen and A. Ribeiro, “Stable and Transferable Wireless Resource Allocation Policies via Manifold Neural Networks”, In ICASSP 2022-2022 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) (pp. 8912-8916). IEEE.

Z. Wang, L. Ruiz and A. Ribeiro, “Stability of Neural Networks on Riemannian Manifolds”, , In 2021 29th European Signal Processing Conference (EUSIPCO) (pp. 1845-1849). IEEE. **Best Student Paper Award**

Z. Wang, M. Eisen and A. Ribeiro, “Unsupervised Learning for Asynchronous Resource Allocation in Ad-hoc Wireless Networks”, In ICASSP 2021-2021 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), pp. 8143-8147. IEEE, 2021.

L. Ruiz, **Z. Wang** and A. Ribeiro, “Graph and Graphon Neural Network Stability”, In ICASSP 2021-2021 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), IEEE, 2021.

Z. Wang, M. Eisen and A. Ribeiro, “Decentralized Wireless Resource Allocation with Graph Neural Networks”, In 2020 54th Asilomar Conference on Signals, Systems, and Computers, pp. 299-303. IEEE, 2020.

C. Shen, **Z. Wang**, S. S Villar and M. van der Schaar, “Learning for Dose Allocation in Adaptive Clinical Trials with Safety Constraints”, In International Conference on Machine Learning, pp. 8730-8740. PMLR, 2020.

Z. Wang, Z. Ying, and C. Shen, “Opportunistic Spectrum Access via Good Arm Identification”, IEEE GlobalSIP 2018, Anaheim, California, USA, Nov. 2018.

Z. Wang and C. Shen, “Small Cell Power Assignment with Unimodal Continuum-armed Bandits”, 2018

IEEE International Conference on Communications Workshops on 5G-UDN.

Z. Wang, R. Zhou, and C. Shen, “Regional Multi-Armed Bandits”, Proceedings of the Twenty-First International Conference on Artificial Intelligence and Statistics (AISTATS), PMLR 84:510-518, Playa Blanca, Lanzarote, Canary Islands, April 9-11, 2018.

Z. Wang, C. Shen, X. Luo, M. van der Schaar, “Learn to Adapt: Self-Optimizing Small Cell Transmit Power with Correlated Bandit Learning”, IEEE International Conference on Communications (ICC), 2017.

SKILLS

Programming: Python, Pytorch, C, JAVA, MATLAB, Origin
Documentation: MS Office, LaTeX

AWARDS AND RECOGNITIONS

EUSIPCO Best Student Paper Award	Sep. 2021
Awarded by EURASIP to 3 student finalists at the paper competition Q&A	
The Bruce Ford Memorial Fellowship	2019
Excellence fellowship granted by the University of Pennsylvania in addition to The Dean’s Fellowship	
National Award for Graduates	Sep. 2017
Granted by China’s Ministry of Education to graduate students with excellent academic performance.	
IEEE ICC student Travel Grant	2017
Awarded by IEEE to cover for travel expenses.	
The First Prize in Graduate Academic Scholarship: USTC	2016-2019
Excellent Award: The Undergraduate Research Program in USTC	Oct.2015
First prize of Contemporary Undergraduate Mathematical Contest in Modeling, Anhui Division	Sep. 2015
Outstanding Student Scholarship: USTC	2013-2015
Outstanding Volunteer of the Chinese Young Volunteers Association	2013

PROFESSIONAL MEMBERSHIPS

IEEE student membership	2017- Present
Graduate member	
IEEE Signal Processing Society Membership	2019- Present
Student member	