

ZHIYANG WANG

CONTACT

Room 407B, 3401 Walnut St,
Department of Electrical and Systems Engineering
University of Pennsylvania,
Philadelphia, PA, 19104, USA

Mobile: (+1)2676703385

E-mail: zhiyangw@seas.upenn.edu

Homepage: <http://zhiyangw.com>

RESEARCH INTERESTS

My research is focused 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 and Systems 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

Advisor: Prof. Cong Shen

PUBLICATIONS

Journal:

Z. Wang, L. Ruiz and A. Ribeiro, "Geometric Graph Filters and Neural Networks: Limit Properties and Discriminability Trade-offs," accepted at 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", in IEEE Transactions on Signal Processing, vol. 72, pp. 1892-1909, 2024.

Z. Wang, L. Ruiz and A. Ribeiro, "Stability to Deformations of Manifold Filters and Manifold Neural Networks", in IEEE Transactions on Signal Processing, vol. 72, pp. 2130-2146, 2024.

A. Parada-Mayorga, **Z. Wang**, F. Gama and A. Ribeiro, "Stability of Aggregation Graph Neural Networks", in IEEE Transactions on Signal and Information Processing over Networks, vol. 9, pp. 850-864, 2023.

A. Parada-Mayorga, **Z. Wang** and A. Ribeiro, "Graphon Pooling for Reducing Dimensionality of Signals and Convolutional Operators on Graphs", in IEEE Transactions on Signal Processing, vol. 71, pp. 3577-3591, 2023.

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 Transactions on Signal Processing, 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:

- Z. Wang**, L. Ruiz and A. Ribeiro, “Convergence of Graph Neural Networks on Relatively Sparse Graphs”, In 2023 57th Asilomar Conference on Signals, Systems, and Computers (pp. 566-572). IEEE.
- 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.

WORK EXPERIENCE

Mitsubishi Electric Research Laboratories
Research Intern

Jun 2023 - Aug 2023

TEACHING EXPERIENCE

University of Pennsylvania

Teaching Assistant

ESE 514, Graph Neural Networks

Fall 2021

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

AWARDS AND RECOGNITIONS

EECS Rising Stars

Nov. 2023

2023 Rising Stars in EECS Workshop at Georgia Tech

Rising Star Program in Signal Processing at ICASSP 2023

Jun. 2023

Awarded by ICASSP 2023

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

SKILLS

Programming: Python, Pytorch, C, JAVA, MATLAB, Origin

Documentation: MS Office, LaTeX

PROFESSIONAL MEMBERSHIPS

IEEE student membership

2017- Present

Graduate member

IEEE Signal Processing Society Membership

2019- Present

Student member

REVIEWER EXPERIENCE

Journal:

IEEE Transactions on Vehicular Technology

IEEE Transactions on Signal Processing

IEEE Journal on Selected Areas in Communications

IEEE Transactions on Wireless Communications

IEEE Sensors Journal

IEEE Internet of Things Journal

IEEE Access

SIAM Journal on Mathematics of Data Science

International Journal of Electrical and Computer Engineering Systems

Conference:

IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2021-2024

Asilomar Conference on Signals, Systems, and Computers 2022,2023

IEEE International Workshop on Machine Learning for Signal Processing (MLSP) 2023

IEEE International Symposium on Information Theory 2024