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 and Systems Engineering The Dean's Fellowship recipient The Bruce Ford Memorial Fellowship recipent	2019-Present Advisor: Prof. Alejandro Ribeiro
Pennsylvania State University	Jul. 2018 - Dec. 2018
Visiting Scholar in Electrical Engineering	Advisor: Prof. Jing Yang
University of Science and Technology of China	2012-2019
Master in Electrical Engineering	Advisor: Prof. Cong Shen
Bachelor in Electrical Engineering	Advisor: Prof. Cong Shen

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.

Z. Wang, L. Ruiz and A. Ribeiro, "Stability to Deformations of Manifold Filters and Manifold Neural Networks", accepted at IEEE Transactions on Signal Processing.

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 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:

Z. Wang, L. Ruiz and A. Ribeiro, "Convergence of Graph Neural Networks on Relatively Sparse Graphs", accepted at Asilomar 2023.

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

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	ov. 2023
2023 Rising Stars in EECS Workshop at Georgia Tech	
Rising Star Program in Signal Processing at ICASSP 2023 J	un. 2023
Awarded by ICASSP 2023	
EUSIPCO Best Student Paper Award	lep. 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 S	lep. 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:USTC2	016-2019
Excellent Award: The Undergraduate Research Program in USTC	Oct.2015
First prize of Contemporary Undergraduate Mathematical Contest in Modeling	, Anhui
Division	ep. 2015
Outstanding Student Scholarship: USTC 2	013-2015
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 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