ZHIYANG WANG

CONTACT

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RESEARCH INTERESTS

My research is focused on the areas of wireless communications and machine learning. I am especially interested in large-scale graph neural networks and their theoretical analyses. Some of my projects include implementing machine learning techniques to solve problems in wireless communications. I am also focused on theoretical analyses of the limits of graph neural networks as manifold neural networks and their applications on point clouds.

EDUCATION

University of Pennsylvania *2019-Present*
Ph.D. candidate in Electrical Engineering Advisor: Prof. Alejandro Ribeiro
The Dean's Fellowship recipient
The Bruce Ford Memorial Fellowship recipent

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

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, "Stability to Deformations of Manifold Filters and Manifold Neural Networks ", submitted.

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:

Z. Wang, L. Ruiz and A. Ribeiro, "Convolutional Neural Networks on Manifolds: From Graphs and Back", Accepted at 2022 Asilomar Conference on Signals, Systems, and Computers.

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: 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