Yu Wu

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Research Interests

I am broadly interested in topics in machine learning, Human-Computer Interaction and signal processing, including distributed machine learning theory, graph neural network, human activity recognition, sensor signal processing and recognition.

EDUCATION

Rutgers, The State University of New Jersey, Piscataway, New Jersey, USA *August 2020-present*
PhD candidate in Computer Engineering GPA: 4.0/4.0
University of Science and Technology of China (USTC), Hefei, China *June 2017-June 2020*
Master in Electronic Engineering and Information Science GPA: 3.31/4.3
University of Science and Technology of China (USTC), Hefei, China *July 2013-June 2017*
Bachelor in Information Security GPA: 3.18/4.3

RESEARCH EXPERIENCE

Edge-centric Distributed Machine Learning

Research Assistant, Rutgers, USA *September 2020-Present*

Advisor: Anand Sarwate

●We are building the resilient ML theories and algorithms through local-edge-cloud hierarchical systems.

●We proposed convex surrogate loss functions used for learning with abstention settings, while ensuring the consistency to optimal loss.

On Accuracy of Delay and Extrapolate Method in Online Misalignment Estimation

Research Intern, Bell Lab, USA *June 2022-August 2022*

Advisor: Carl Nuzman, Shirin Jalali

●We rigorously analyze the accuracy and effectiveness of classic method “delay and extrapolate” for estimating the misalignment error when applied to the least mean squares (LMS) algorithm.

● Our analysis for mean squared error of filter coefficients made corrections to similar, well- known results in the previous LMS literature.

Graph Neural Network Based Solutions for Human Activity Recognition Using Motion Sensors

Research Assistant, USTC, China *May 2019-June 2020*

Advisor: Bin Liu

●Considering the distribution of embedded sensors and the topological structure of human skeleton, proposed schemes to extract body information for HAR

●Designed two deep learning frameworks, SGCN and G2RU, used for short term and long term activity recognition, respectively.

Tessutivo: Contextual Interactions on Interactive Fabrics with Inductive Sensing

Research Intern, Dartmouth College, USA *December 2018-April 2019*

Advisor: Xing-Dong Yang

●Proposed Tessutivo, a contact-based inductive sensing technique for contextual interactions on interactive fabrics.

●Built a prototype containing coils made of conductive thread with maximized sensitivity conducted by a new inductance approximation formula.

Towards Anti-interference WiFi-based Activity Recognition System Using Interference-Independent Phase Component

Research Assistant, USTC, China *October 2018-November 2018*

Advisor: Nenghai Yu & Bin Liu

●Proposed an algorithm of phase filter based on gradient variances, contributing to the success of PhaseAnti, a novel HAR system to exploit the CCI- independent phase component, NLPEV (Nonlinear Phase Error Variation), of Channel State Information (CSI) to cope with the impact of CCI.

PUBLICATIONS

Jinyang Huang, Bin Liu, Chenglin Miao, Yan Lu, Qijia Zheng, **Yu Wu**, Jianchun Liu, Lu Su, Chang Wen Chen, "PhaseAnti: an Anti-interference WiFi-based Activity Recognition System Using Interference-Independent Phase Component." *IEEE Transactions on Mobile Computing, 2021*. (TMC 2021)

Jinyang Huang, Bin Liu, Pengfei Liu, Chao Chen, Ning Xiao, **Yu Wu**, Chi Zhang, and Nenghai Yu, "Towards Anti-interference WiFi-based Activity Recognition System Using Interference-Independent Phase Component." *Proceedings of IEEE Conference on Computer Communications, 2020*. (INFOCOM 2020)

Jun Gong, **Yu Wu**, Lei Yan, Teddy Seyed, Xing-Dong Yang,"Tessutivo: Contextual Interactions on Interactive Fabrics with Inductive Sensing." *Proceedings of the 32nd Annual ACM Symposium on User Interface Software and Technology*. ACM, 2019. (UIST 2019)

TEACHING EXPERIENCE

Teaching Assistant

●Linear Signal and system	Rutgers, USA	*Sep. 2023-Dec. 2023*
●Discrete Mathematics	Rutgers, USA	*Jan. 2022-Jun. 2022*
●Principals of Electrical Engineering	Rutgers, USA	*Sep. 2021-Dec. 2021*
●Probability and Random Processes	Rutgers, USA	*Jan. 2021-Jun. 2021*
●Principals of Electrical Engineering	Rutgers, USA	*Sep. 2020-Dec. 2020*
●Mathematical Logic and Graph Theory	USTC, China	*Sep. 2018-Dec. 2018*

SKILLS

Skilled Curriculum: Optimization, Detection and Estimation Theory, Machine Vision, Wireless Network and Security, Statistical Learning, Linear Algebra, Computer Graphics, Digital Image Analysis, Computing Network, Information Theory, Mathematical logic and Graph Theory, Stochastic Signal and System, Security of Computer, Protocol of Network Security, etc.

Programming: C, Python, Matlab, R