Wenyuan Zhao

Curriculum Vitae

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Research Interest

Deep Gaussian Process and Generative Model: Designing systematic approaches for constructing deep GPs and BNNs that are amenable to efficient training and prior design.

Information and Coding Theory: Providing security and privacy guarantees in modern information systems, in addition to the regular data retrieval functionality.

Education

2023 – Now **Ph.D.**, **Texas A&M University**, College Station, *GPA – 4.0*.
Information Science and Learning Systems
Advisor: *Dr. Chao Tian*

2021 – 2023 **M.S.**, **University of California, San Diego**, *GPA – 3.68*.
Communication Theory and Systems
Research: AI-driven Dynamic mmWave Mesh Backhual
Advisor: *Dr. Xinyu Zhang*

Selected Publications

arXiv "Weakly Private Information Retrieval from Heterogeneously Trusted Servers"
Wenyuan Zhao, Yu-Shin Huang, Ruida Zhou, Chao Tian
arXiv preprint, submitted to *IEEE Transactions on Information Theory*, 2024.
(Long version of ISIT24 paper.)

ISIT 2024 "Weakly Private Information Retrieval from Heterogeneously Trusted Servers"
Yu-Shin Huang, **Wenyuan Zhao**, Ruida Zhou, Chao Tian
IEEE International Symposium on Information Theory ***(ISIT)***, 2024.

Other Publications

BE Thesis "Machine Learning-based Matrix Optimization Algorithm in Massive MIMO"
Wenyuan Zhao

ICCDS 2021 "A Survey on Fog Computing Applications in Internet of Vehicles"

Wenyuan Zhao
International Conference on Computing and Data Science ***(ICCDS)***, *Stanford* 2021

JOP 2020 "Classification of Customer Reviews on E-commerce Platforms Based on Naive Bayesian Algorithm and Support Vector Machine"
Wenyuan Zhao
Journal of Physics: Conference Series ***(JOP)***, *IOP Publishing*, 2020

Graduate Research

2023 – **Sparsely Activated BNNs from Deep Gaussian Processes**.
- Designed sparse expansions for deep Gaussian processes (DGPs) as BNNs
- Validated interpretability and uncertainty quantification on sparse DGPs
- Developed software and tutorials for sparse DGP package and applications in regression, classification, generative tasks

2023 – 2024 **Weakly Private Information Retrieval**.
- Designed code schemes for weakly private information retrieval (W-PIR) with homogeneity and heterogeneity in servers' trustfulness
- Optimized trade-off between download cost and the amount of privacy leakage
- Achieved the minimum download cost under Max-L, MI, DP metrics

2022 – 2023 **AI-operated Dynamic mmWave Mesh Network**.
- Proposed methods on deploying reinforcement learning to control highly-dynammic mmWave backhaul networks
- Bridged the Simulation-to-Reality gap of RL policies in mmWave interference mapping
- Developed system-level modules for software-defined mmWave mesh network

2020 – 2021 **Machine learning-based Matrix Optimization in Massive MIMO**.
- Complex matrix inversion in precoding algorithms for massive MIMO downlink
- Proposed Complex-valued Gradient Neural Network (CVGNN) to solve the complex matrix inversion problem in wireless communication senarios
- Evaluated CVGNN in Rayleigh channel and massive MIMO applications

2019 – 2020 **Large-scale mmWave Transmission and Beamforming**.
- Formulated large-scale mmWave beam alignment and tracking (BA/T) as a stochastic bandit learning problem
- Developed greedy and upper confidence bound strategy for optimal beam searching
- Evaluated bandit learning-driven mmWave BA/T in dynamic environments

Awards

2020 Sun Qingyun Scholarship for Academic Achievement

2019 **First Prize (Top 0.7%)** of Mathematical Contest in Modeling (CUMCM)

Mitsubishi Electric Corporation Scholarship

Skills

Programming C/C++, Python, Matlab, LaTeX, Verilog, Java, Shell scripting

ML Tools PyTorch, TensorFlow, Deeplearning Toolbox

Services

Reviewers 2024: ISIT