

YONGSHENG MEI

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SKILLS

Programming	Python, C, C++, MATLAB, Java, SQL, R, Verilog
Libraries	PyTorch, TensorFlow, Keras, Scikit-Learn, NumPy, Pandas, CVX
Databases	MySQL, PostgreSQL, Microsoft SQL, NoSQL
Tools	Vim, Git, Bash, GDB, PyCharm, Jupyter, LaTeX, Visual Studio, Altium Designer

EDUCATION

The George Washington University (GWU) Sept. 2019 – Present
Doctor of Philosophy in Electrical Engineering Washington, DC, US
Research Areas: Reinforcement Learning, Multi-Agent Learning, Bayesian Optimization, Network Security
GPA: 4.00

Huazhong University of Science and Technology (HUST) Sept. 2015 – June 2019
Bachelor of Engineering in Automation Engineering Wuhan, Hubei, China
Outstanding Graduate Award
Second Prize of Hubei Province in the 2017 National Undergraduate Electronic Design Contest
Relevant Courses: Pattern Recognition, Computer Vision, Control Theory, Computer Architecture
GPA: 3.81

EXPERIENCE

Research Assistant Sept. 2019 - Present
Lab for Intelligent Networking and Computing (LINC), GWU Washington, DC, US

Topic 1: Multi-Agent Reinforcement Learning (MARL) Aug. 2020 – Present

- Led a project, **MAC-PO**, to develop an optimized prioritized experience replay scheme in off-policy MARL by assigning transitions with different prioritization weights. Experiments show that MAC-PO outperform other prioritization methods and several popular MARL algorithms.
- Led a project, **AccMER**, to develop a data-reuse strategy that can be used in conjunction with experience replay to accelerate a group of MARL algorithms.
- Led a project, **ReMIX**, to find the optimal projection to monotonic mixing function classes in value-factorization-based MARL algorithms. The effectiveness of ReMIX has been demonstrated on selected benchmarks.

Topic 2: Bayesian Optimization May 2022 – Present

- Led to develop a novel **gradient-aware Bayesian optimization framework** for determining local optimum solutions in multimodal functions for hyperparameter tuning, etc.
- Led to develop a **Bayesian optimization model for doubly stochastic point process** on time series data to estimate arrival intensity and detect the peak, change points, etc.

Topic 3: Multi-modal Medical Image Processing Feb. 2021 – Dec. 2022

- Led a project to develop a **multi-modal image segmentation model** for brain MRI data. The framework can improve the accuracy via data fusion and attention with extracted novel common information microstructures among modalities. The method achieves 92% accuracy for whole tumor on the public BraTS-2020 dataset.

Topic 4: Network Security via Protocol Customization (DIALECT) Sept. 2019 – Aug. 2021

- Led a project, **MPD**, to develop a reliable application-layer moving target defense model via customized communication protocols with dynamic synchronization and management.

Electronic Engineer Student Intern Feb. 2017 – Aug. 2017
Electrical and Electronic Technology Innovation Center, HUST Wuhan, Hubei, China

Led the printed circuit board design and FPGA programming for an adaptive signal filter and won the **Second Prize** of Hubei Province in the 2017 National Undergraduate Electronic Design Contest.

PRESENTATIONS

ICML 2023 workshop on Machine Learning for Multimodal Healthcare Data	July 2023, Honolulu, HI, US
Meeting with the Office of Naval Research (ONR) on the project DIALECT	Feb. 2022, Online
EAI 17th International Conference on Security and Privacy in Communication Networks	Sept. 2021, Online
TPCP 2020 Software Security Summer School (SSSS'20)	Aug. 2020, Online
IEEE 14th International Workshop on Software Clones (IWSC)	Feb. 2020, London, ON, Canada

PUBLICATIONS

Under Review

1. **Yongsheng Mei**, Hanhan Zhou, and Tian Lan, *Projection-Optimal Monotonic Value Function Factorization in Multi-Agent Reinforcement Learning*, Under review of NeurIPS.

Published

1. **Yongsheng Mei**, Tian Lan, Mahdi Imani, and Suresh Subramaniam, *A Bayesian Optimization Framework for Finding Local Optima in Expensive Multi-Modal Functions*, European Conference on Artificial Intelligence (ECAI), September 2023. [\[PDF\]](#)
2. **Yongsheng Mei**, Tian Lan, and Guru Venkataramani, *Exploiting Partial Common Information Microstructure for Multi-Modal Brain Tumor Segmentation*, ICML workshop on Machine Learning for Multimodal Healthcare Data (ML4MHD), July 2023. [\[PDF\]](#)
3. Kailash Gogineni[†], **Yongsheng Mei**[†], Peng Wei, Tian Lan, and Guru Venkataramani, *AccMER: Accelerating Multi-agent Experience Replay with Cache Locality-aware Prioritization*, IEEE International Conference on Application-specific Systems, Architectures and Processors (ASAP), July 2023. [\[PDF\]](#)
4. **Yongsheng Mei**, Hanhan Zhou, Tian Lan, Guru Venkataramani, and Peng Wei, *MAC-PO: Multi-Agent Experience Replay via Collective Priority Optimization*, International Conference on Autonomous Agents and Multiagent Systems (AAMAS), June 2023. [\[PDF\]](#)
5. Kailash Gogineni, **Yongsheng Mei**, Guru Venkataramani, and Tian Lan, *Verify-Pro: A Framework for Server Authentication Using Communication Protocol Dialects*, IEEE Military Communications Conference (MILCOM), September 2022. [\[PDF\]](#)
6. Yurong Chen, **Yongsheng Mei**, Tian Lan, and Guru Venkataramani, *Exploring Effective Fuzzing Strategies to Analyze Communication Protocols*, ACM Digital Threats: Research and Practice, March 2022. [\[PDF\]](#)
7. **Yongsheng Mei**, Kailash Gogineni, Tian Lan, and Guru Venkataramani, *MPD: Moving Target Defense through Communication Protocol Dialects*, International Conference on Security and Privacy in Communication Networks (SecureComm), September 2021. [\[PDF\]](#)
8. Hongfa Xue, **Yongsheng Mei**, Kailash Gogineni, Guru Venkataramani, and Tian Lan, *Twin-Finder: Integrated Reasoning Engine for Pointer-related Code Clone Detection*, International Workshop on Software Clones (IWSC), February 2020. [\[PDF\]](#)