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.

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 to develop a **multi-modal image segmentation model** for brain tumor 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 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.

Visiting Scholar June 2023 – Aug. 2023
Intelligence Optimization for Networks (ION) Lab, Purdue University *West Lafayette, IN, US*

Collaborated with Prof. Christopher Brinton on developing a **class-incremental federated learning model** with time-variant input of each edge device. The model uses the **diffusion model** as the base generative model for the server and clients for better learning performance.

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]