Yiyang Lu

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EDUCATION

William & Mary Williamsburg,VA,US
Ph.D. in Computer science, co-Advisors: Prof. Jie Ren, Prof. Evgenia Smirni Sep 2021 — Present
University of Electronic Science and Technology of China Chengdu, China
Bachelor in Software Engineering Sep 2016 — Sep 2020
Research Interest: HPC system operation, Reliability, GPUs, Autonomous Vehicle Safety, Fault Correction, Machine Learning, Anomaly Detection, Time Series Analysis, Data Analysis

PUBLICATIONS

Yiyang Lu , Jie Ren, Evgenia Smirni. "Unveiling HPC Secrets: A Fundamental ML Model for Telemetry Analysis and Beyond."(SUBMITTED)

Anna Schmedding, Philip Schowitz, Xugui Zhou, **Yiyang Lu**, Lishan Yang, Homa Alemzadeh and Evgenia Smirni. "Strategic Resilience Evaluation of Neural Networks within Autonomous Vehicle Software." In SAFECOMP2024: 43rd International Conference on Computer Safety, Reliability and Security.

Yiyang Lu , Jie Ren, Yasir Alanazi, Ahmed Mohammed, Diana McSpadden, Laura Hild, Mark Jones, Wesley Moore, Malachi Schram, Bryan Hess, Evgenia Smirni. "Investigating Anomalies in Compute Clusters: An Unsupervised Learning Approach." In SC '23 Research Posters: Proceedings of the International Conference on High Performance Computing, Networking, Storage and Analysis, November 2023.

Bi, Shengjie, **Yiyang Lu**, Nicole Tobias, Ella Ryan, Travis Masterson, Sougata Sen, Ryan Halter, Jacob Sorber, Diane Gilbert-Diamond, and David Kotz. "Measuring Children's Eating Behavior with a Wearable Device." In 2020 IEEE International Conference on Healthcare Informatics (ICHI), 1–11. Oldenburg, Germany: IEEE, 2020.

EXPERIENCE

William & Mary, Research Assistant Williamsburg,VA,US
HPC system operation, Reliability, Autonomous Vehicle Safety, GPUs June 2022 - Present

William & Mary, Teaching Assistant Williamsburg,VA,US
Discrete Structures, Network Systems and Design, Data Structures Sep 2021 - May 2022

ByteDance, Research & Development Intern Shenzhen,China
Network Traffic Analysis Dec 2020 - Jul 2021

Shenzhen Institute of Advanced Technology(SIAT), Research Assistant Shenzhen,China
Brain-Computer Interface and Neuromorphic Intelligence May 2020 - Oct 2020

Dartmouth College, Research Assistant Hanover,NH,US
Auracle – wearable technology for the study of eating behavior Mar 2019 - Aug 2019

PROJECTS

HPC telemetry Analysis May 2023 - Now, W&M
As compute clusters continue to grow in scale and complexity, the analysis of HPC telemetry becomes increasingly challenging. This project aims to leverage novel learning methods to understand system dynamics.

- Analyzed a large amount of real-world production telemetry data from OLCF, JLab clusters.
- Proposed a predictive framework that adapts to diverse tasks, including anomaly detection and workload prediction.
- Developed a method to reveal telemetry relationships, offering a holistic view of system behavior.
- Analyzed the change of telemetry relationships relative to workload changes.

Resilience Evaluation of Autonomous Vehicle Models May 2023 - May 2024, W&M
The technology behind self-driving vehicles has greatly improved in the past decade, mainly due to rapid advances in deep neural networks (DNNs), making it necessary to detect faults in these safety-critical systems that could cause safety hazards or accidents.

- Performed strategic resilience evaluation on an L4 autonomous driving system
- Examined the effectiveness of mitigation on critical faults in autonomous vehicles.

Network Traffic Analysis Dec 2020 - Jul 2021, ByteDance

- Optimize the rules and policies for NTA (Network Traffic Analysis).

Brain-Computer Interface May 2020 - Oct 2020, SIAT

- Setup the 'Neuronpixels' electrodes and implement wired/Bluetooth communication on the MCUs.

Auracle Mar 2019 - Aug 2019, Dartmouth

- Implement the energy-efficient algorithm for classification task on a wearable device.

PROFESSIONAL SERVICE

Sigmetrics'25: Special Interest Group on Measurement and Evaluation 2025 (subreviewer)
Sigmetrics'24: Special Interest Group on Measurement and Evaluation 2024 (subreviewer)
MSN 2022: The 18th International Conference on Mobility, Sensing and Networking (subreviewer)

SKILLS

- Programming Languages: Python, Embeded C, Java, Go
- Data analysis: PyTorch, NumPy, Pandas, Pyspark, Tsfresh, Librosa, Optuna, Matplotlib, Plotly, PyG, Networkx
- Simulator: Carla, Apollo
- Database: Spark, Hive, Elasticsearch, ClickHouse