

Yiyang Lu

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EDUCATION

William & Mary

Ph.D. in Computer science, co-Advisors: Prof. Jie Ren, Prof. Evgenia Smirni

University of Electronic Science and Technology of China

Bachelor in Software Engineering

Research Interest: HPC system operation, Reliability, GPUs, Autonomous Vehicle Safety, Fault Correction, Machine Learning, Anomaly Detection, Time Series Analysis, Data Analysis

Williamsburg, VA, US

Sep 2021 — Present

Chengdu, China

Sep 2016 — Sep 2020

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

HPC system operation, Reliability, Autonomous Vehicle Safety, GPUs

Williamsburg, VA, US

June 2022 - Present

William & Mary, Teaching Assistant

Discrete Structures, Network Systems and Design, Data Structures

Williamsburg, VA, US

Sep 2021 - May 2022

ByteDance, Research & Development Intern

Network Traffic Analysis

Shenzhen, China

Dec 2020 - Jul 2021

Shenzhen Institute of Advanced Technology (SIAT), Research Assistant

Brain-Computer Interface and Neuromorphic Intelligence

Shenzhen, China

May 2020 - Oct 2020

Dartmouth College, Research Assistant

Auracle – wearable technology for the study of eating behavior

Hanover, NH, US

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, Embedded C, Java, Go
- Data analysis: PyTorch, NumPy, Pandas, Pyspark, Tsfresh, Librosa, Optuna, Matplotlib, Plotly, PyG, Networkx
- Simulators: Carla, Apollo
- Databases: Spark, Hive, Elasticsearch, ClickHouse