

# 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

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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

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