Lesley (Yajie) Zhou

PHO 401-415, Boston University, 8 St Mary's St, Boston, MA 02215
Email: lesleychou339@gmail.com
Website: https://lesleychou.github.io/
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RESEARCH INTERESTS

Data-driven Networking, Systems and Security

EDUCATION

BOSTON UNIVERSITY *Sep. 2021 - now*
PhD student in Computer Engineering
- Advisor: Prof. Zaoxing (Alan) Liu

Korea Advanced Institute of Science and Technology (KAIST) *Aug. 2020*
M.S. in Electrical Engineering
- Advisors: Prof. Yung Yi, Prof. Dongsu Han

XIDIAN UNIVERSITY *Jul. 2018*
B.E. in Computer Science and Technology
- Bachelor Dissertation Award: Top 1% in CS Dept.

PUBLICATIONS

- Automatic Curriculum Generation for Learning Adaptation in Networking
  Zhengxu Xia*, **Yajie Zhou***, Francis Y. Yan, Junchen Jiang.
  (*equal contribution)
  ACM SIGCOMM, 2022

NETWORKING EXPERIENCE

Privacy-Preserving Network Telemetry System *Apr. 2022 - Present*
Advisors: Prof. Alan Liu, Prof. Ayse Coskun, Prof. Gianluca Stringhini (BU)
Sponsors: *Red Hat Research (as part of AI4CloudOps project)*
Motivation: Protect user's differential privacy while keeping high querying accuracy for network operators.
- Protect user's sensitive data by adding noise through the autoencoder model.
- Keep high accuracy for telemetry querying tasks.
- Reduce data retention cost by only saving the ML model with encoded features.

Data-Driven Advanced Persistent Threats (APT) Analysis *Nov. 2021 - Present*
Advisors: Prof. Alan Liu (BU)
Motivation: Provide in-depth attack analysis with limited data in real-world APT scenarios.
- Develope Transformer-based APT detection, with limited labeled data.
- Build fine-grained attack analysis instead of the simple binary classifier (threat vs benign).

- Reconstruct the attack story for security analysts and engineers.

Generalizability of DL based Networking Systems *Sep. 2020 - May. 2022*
Advisors: Prof. Junchen Jiang (UChicago), Dr. Francis Yan (MSR)
Motivation: How can we improve the generalizability of existing RL based networking systems?

- Propose a novel training framework that enhances the performance and generalization of reinforcement learning (RL) algorithms in networking and systems.
- Improve the performance and generalization of simulation-trained RL algorithms under unseen workloads and in real environments.

Video Streaming QoE improvement *Oct. 2019 - Aug. 2020*
M.S. thesis research with Prof. Dongsu Han, Prof. Yung Yi (KAIST)
Motivation: How to adapt to various end user preferences in video streaming?

- Propose a Multi-Objective Reinforcement Learning based adaptive-bitrate framework to optimize QoE for various user preferences.
- Demonstrated a whole Pareto-frontier solution for adaptive user preferences, without the need for hyper-parameter tuning or model retraining.

MACHINE LEARNING EXPERIENCE

Reinforcement Learning *Sep. 2019 - Feb. 2020*
M.S. Researcher (KAIST)

- Improved applied Multi-Objective Reinforcement Learning with an action-inference module, aiding the RL model to infer a policy without knowing prior objective preferences.
- Develope a communication scheme for Cooperative Multi-Agent Reinforcement Learning in the StarCraft environment.

PATENT

- Zhou, Y. 2020. "Method and Apparatus for Transmitting Video Data." *Korean Patent Application 10-2020-0141018, registered October 2020.*

INTERNSHIP

Microsoft Research (Redmond, WA) *Exp. Jun. 2023 - Aug. 2023*
Research Internship

Tencent Corp. Academy (Xi'an, China) *Jun. 2016 - Aug. 2016*
Software Engineer Internship

HONORS AND AWARDS

- **N2Women Young Researcher Fellowship**, 2022
- **SIGCOMM Travel Grants**, Amsterdam, Netherlands, 2022
- **Grad Cohort for Women-CRA Participation**, New Orleans, 2022

WORKSHOP TALKS

- **CISE Graduate Student Workshop (CGSW 9.0)**
  Boston University, 2023
  Presenter: Present the project progress of "Privacy-preserving network telemetry systems".
- **MOC Alliance Workshop**
  Boston University, 2023
  Poster speaker: Introduce the AI4CloudOps projects to the audience from industry.

SERVICE

- **N2Women Young Researcher Meeting Event**
  SIGCOMM, 2022
  Event host: Connect mentors from academia and industry with female PhD/Postdocs to share advice for academic career development.

UNDERGRADS MENTORED

- **BU ECE Senior students:** Nengneng Yu, Haoming Yi, Rashid Kolaghassi, Maxwell Malamut
- **BU ECE Junior students:** Robert D'Antonio

TEACHING

- **Introduction of Networking (BU EC441)**
  Teaching assistant, Fall 2022, Spring 2023

SKILLS

Programming Languages: Python, C++, LaTeX.
Machine Learning Frameworks: PyTorch, Tensorflow, Keras.
Editor: Emacs, PyCharm, Visual Studio.