Liang **Zhao**

Network Engineer · Network Security · Researcher
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Education

Graduate Institute for Advanced Studies, SOKENDAI — Chiyoda, Tokyo, Japan
Ph.D. candidate — April 2020 - present

University of Tokyo — Bunkyo, Tokyo, Japan
M.Eng. in Electrical Engineering and Information Systems (Network Engineering) — April 2014 - March 2018

University of Tokyo — Bunkyo, Tokyo, Japan
B.S. in Electrical and Electronics Engineering — April 2010 - March 2014

Skills

Languages	**Python**, **C++**, **Javascript**, Go, Rust, Ruby
Spoken Languages	**English**, **Japanese**, **Chinese**
Knowledge	**Network architecture**, **IPv6**, **DNS**, **congestion control**, **Age of Information**, **Information Centric Networks**, Graph Neural Network, SRv6, TCP BBR, video streaming, traffic analysis, blockchain, cloud computing
Tools	**Docker**, **Amazon AWS**, **Elasticsearch**, Network Simulator, Node.js, SQL

Publications

- Zhao, L., Kobayashi, S., Fukuda, K. (2024). Exploring the Discovery Process of Fresh IPv6 Prefixes: An Analysis of Scanning Behavior in Darknet and Honeynet. In: Richter, P., Bajpai, V., Carisimo, E. (eds) Passive and Active Measurement. PAM 2024. Lecture Notes in Computer Science, vol 14537. Springer, Cham. https://doi.org/10.1007/978-3-031-56249-5 4
- Liang Zhao, Satoru Kobayashi and Kensuke Fukuda, "Design and Implementation of IPv6 Scan Detection System", IEICE General Conference, Mar 2023
- Liang Zhao and Hitoshi Aida, "Bitrate Adaptation based on Available-Bandwidth Estimation in Video Streaming over NDN", NS/IN, Mar 2018

Research Projects

Scan detection honeynet in IPv6 Network — Fukuda lab, SOKENDAI
Oct. 2022 - Present

- Design and implement a IPv6 scan detection system with responsive honeynet that attracts scan packets from IPv6 scanners. Analyze the characteristics of scanning activities and the process of fresh prefix discovery in the IPv6 network.

Age of Information aware IoT system — SOKENDAI
Apr. 2020 - Apr. 2021

- Investigate the information freshness in cache-enabled IoT systems with publisher/subscriber model and propose an efficient update scheduling algorithm that minimize the average weighted Age of Information (AoI) experienced by the subscribers.

Bitrate Adaptation and Video Streaming over NDN — University of Tokyo
Apr. 2016 - March. 2018

- Design an algorithm for estimating available bandwidth within the Named Data Network (NDN) framework that allows users to accurately select the appropriate bitrate for video streaming.

Research Interests

- Network monitoring and scan detection, honeynet
- Next generation network architecture, IPv6 network
- Real-time applications, Age of Information
- Machine Learning, Artificial Intelligence, Graph Neural Network
- Transport layer protocols, congestion control, multimedia streaming, bitrate adaption
- Informations Centric Network, caching
- Distributed computing, peer-to-peer networks, Blockchain