Weili Wu

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Education

Georgia Institute of Technology, Atlanta, GA *Sep 2023 - May 2028 (Expected)*
- Ph.D. in Computer Science, Cybersecurity and Privacy
- Advised by professors Alberto Dainotti and Cecilia Testart

Northwestern University, Evanston, IL *Sep 2021 - Jun 2023*
- Master of Science in Computer Science, advised by professor Fabian Bustamante

University of Illinois at Urbana-Champaign, Champaign, IL *Sep 2016 - Dec 2020*
- Bachelor of Science in Statistics & Computer Science, Minor in Mathematics

Work Experience

Nokia Bell Labs, Murray Hill, NJ *Jun 2025 - Aug 2025*
Network Architecture Research Intern, mentored by Jesse Simsarian - Outstanding Innovation Award
- Developped a performance-aware BGP marketplace enabling customers to specify paths with latency and reliability guarantees.
- Discovered valid alternate paths through a combination of Internet-wide traceroute data, AS-relationship and IXP location.
- Monitored the performance and reliability of valid alternate routing paths.

Meta Platforms Inc., Fremont, CA *Jun 2022 - Sep 2022*
Production Engineer Intern, Edge Network Services
- Implemented a rule-based backend scheduler in Python, scheduling tasks across all teams at international PoP site locations through filtering in MySQL database to suggest clubbable task requests, merging across various workflows, estimated to enhance 27% cost efficiency per year.
- Built an evaluation system to analyze incorrect task recommendations and record potential task forecast opportunities.

Selected Projects

Enhancing Internet Disruption Investigation via Path Monitoring *Jan 2024 - Present*
- Extending IODA (Internet Outage Detection and Analysis) to measure latency and packet loss to detect disruptive events.
- Developed a high-performance Internet measurement platform for concurrent network probing and integrated Kafka and InfluxDB to manage large-scale measurement data streams, enabling real-time processing and long-term storage.
- Exploring aggregating BGP prefixes for selecting measurement targets to reduce network load and analyzing traceroute data to determine if the physical paths traversed exhibit an acceptable level of variance when compared to AS-level paths.

Multimodal Preference Optimization for Network Service Provider Type Classification *Jan 2024 - Present*
- Evaluating language models on classifying NSP's types based on their website data, with textual and visual input.
- Leveraging preference optimization techniques (e.g. CPO) to improve the alignment of model classification logic.

Unsteady Underwater - On the Constancy of Submarine Path Properties *Sep 2022 - Aug 2024*
- Coordinated an active probing system with looking-glass nodes and RIPE Atlas to monitor 134 submarine cable paths.
- Performed cluster analysis (K-means on latency dev, packet-loss rate, path-change rate, and constancy metrics) to identify six behavioral classes, revealing that 50% of paths are highly stable, while a subset exhibit high variability and loss, with implications for routing operation and application performance.

Skills

Programming and Infrastructure: Go, Python, C++, Bash/Shell Scripting, Docker, Kafka, Elasticsearch
Networking: Software-Defined Networking, Data center Networking, BGP Analysis, RPKI, Active Probing Techniques
Machine Learning and Large Language Models: PyTorch, Scikit-learn, Model Alignment and Preference Optimization

Publications

- **"Replication: A Two Decade Review of Policy Atoms"** *ACM IMC '25, accepted*
- **"Unsteady Underwater - On the Constancy of Submarine Path Properties"** *IFIP Networking, in press*
- **"Poster: Enhancing Internet Disruption Investigation via Path Monitoring"** *ACM IMC '24*
- **"A Comparative Analysis of Global Mobile Network Aggregators"** *IEEE TNSM*
- **"Global Mobile Network Aggregators: Taxonomy, Roaming Performance and Optimization"** *ACM MobiSys '22*