Shuwen Sun

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Research Interests

My research focuses on understanding distributed system behaviors and building fast, efficient, and reliable systems. In my PhD work I adapted techniques from newer storage device capabilities to build new distributed storage systems. My work also touches semantics and consistency guarantees of distributed systems.

Prior to my current work, I have worked on research projects in datacenter networking and performance diagnosis for distributed systems.

Professional Experience

9/2025 – Present **Research Scientist** *Meta, New York City, NY*
- Performing research on building infrastructure for AI.

9/2018 – 9/2025 **Graduate Research Assistant** *Northeastern University, Boston, MA*
- Designed and implemented a highly-efficient and (single-key) linearizable object store, ZStore, that leverages ZNS SSDs to achieve high performance. [10k+ LOC C++]
- Designed and implemented application network functions (TLS cert validator, transcoder, remote dependency resolution proxy) which offload user/application level functions to the network. [10k+ LOC Rust]

5/2023 – 8/2023 **PhD Research & SWE Intern** *Google Global Networking, New York City, NY*
- Research prototypes for the Google Global Networking team. [12 CL submitted]

6/2022 – 8/2022 **Research Intern** *ThousandEyes (Part of Cisco) Research, San Francisco, CA*
- Performed on Internet measurement related to anomaly detection in HTTP timing. Part of the Internet Research team.

1/2018 – 7/2018 **Staff Engineer** *Hariri Institute for Computing, Boston, MA*
- Staff engineer within MOC working on tracing tools for Openstack and a resource management framework in production.

Education

9/2018 – 8/2025 ***Northeastern University***, *Boston, Massachusetts*
Ph.D. in Computer Science
Thesis: *Towards an Efficient and Strongly-consistent Distributed Object Store*
Advisor: *Prof. Peter Desnoyers*

9/2015 – 5/2017 ***Boston University***, *Boston, Massachusetts*
M.S. in Computer Science

9/2011 – 5/2015 ***Sun Yat-sen University***, *Guangzhou, China*
B.Eng. in Software Engineering

Publication

C5. **ZStore: A Fast, Efficient, and Strongly-Consistent Object Storage System with ZNS SSDs**
Sun, Shuwen, Khor, Isaac, Shin, Ji-Yong, and Desnoyers, Peter.
Under submission

C4. **A case for IO efficiency as a research metric for storage systems**
Sun, Shuwen, Khor, Isaac, Krieger, Orran, and Desnoyers, Peter.
Under submission

C3. **Endpoint-defined In-Network Functions**
Sun, Shuwen and Choffnes, David.
Under submission

C2. **Toward Flexible Auditing for In-Network Functionality**
Sun, Shuwen and Choffnes, David.
CoNEXT-SW '22

C1. **FlexNet: Enabling Flexibility in Cloud Networks**
Yu, Da, Mai, Luo, **Sun, Shuwen**, Krieger, Orran, and Fonseca, Rodrigo.
Under submission

Skill Sets

- **Programming**: C/C++, Rust, Python, Go, Bash
- **Async Programming**: C++ (Boost.Asio, Boost.Beast), Rust (async/await, Tokio, futures)
- **Tools**: SPDK, DPDK, SGX, eBPF, Docker, OpenTracing/OpenTelemetry

- **Networking**: Kernel bypassing, NFV, RDMA, RoCE, Datacenter networking, SDN
- **Storage**: NVMe-over-fabric, SPDK, SSD, Zoned NameSpace SSD
- **Systems**: Distributed systems, End-to-end request tracing, Cloud computing

Honors & Awards

Academic Honors:

1/2018 Northeastern University Graduate School Ph.D. Fellowship.
(Admitted to Ph.D. program in Computer Science at Northeastern University)

Travel Grant Awards:

3/2021 NSDI '21 Conference Student Grant, USENIX
2/2020 NSDI '20 Conference Student Grant, USENIX
8/2019 SIGCOMM '19 Conference Student Grant, NSF
8/2017 SIGCOMM '17 Conference Student Grant, NSF
7/2016 ATC '16 and HotCloud '16 Conference Student Grant, USENIX

Miscellaneous:

2/2022 Invited participants of Google Network Research Summit
9/2014 Second-class Scholarship for Outstanding Students at Sun Yat-sen University
(Top 10%).
4/2011 Recipient of independent recruitment for Sun Yat-sen University in 2011
(Top 6%, roughly 660 of 11,000 in China).

Talks & Posters

Talks:

2/2025 "ZStore: A Fast, Efficient, and Strongly-Consistent Object Storage System with ZNS SSDs"
Shuwen Sun. Talk at *Khoury Software Day 2025*, Boston, MA
2/2025 "ZStore: A Fast, Efficient, and Strongly-Consistent Object Storage System with ZNS SSDs"
Shuwen Sun. Talk at *2025 New England Systems Day*, Boston, MA
1/2024 "A case for IO efficiency as a research metric for storage systems"
Shuwen Sun. Talk at *2nd Northeastern System Day*, Boston, MA
1/2023 "Toward Flexible Auditing for In-Network Functionality"
Shuwen Sun. Talk at *Student Workshop co-located with ACM CoNEXT 2022*, Rome, Italy
12/2022 "Toward Flexible Auditing for In-Network Functionality"
Shuwen Sun. Talk at *1st Northeastern System Day*, Boston, MA
10/2017 "PYTHIA: A Just-in-Time Instrumentation Framework for Debugging Distributed Systems." Lily Sturmann, **Shuwen Jethro Sun**. Talk at *2017 MOC Annual Workshop.* Boston, MA

Posters:

3/2020 "How well does your network (function) function? Understanding Network Functions Under User-level Use Cases" **Shuwen Jethro Sun**, David Choffnes. Poster at *Khoury Ph.D. Open House.*

12/2017 "Pythia: A Cross-layer Just-in-Time Instrumentation Framework for Debugging Distributed Applications." Lily Sturmann, **Shuwen Jethro Sun**, Raja Sambasivan, Orran Krieger, Peter Portante. Poster at *IV New England Networking and Systems Day (NENS'17).* Boston, MA

10/2017 "Pythia: A Just-in-Time Instrumentation Framework for Debugging Distributed Systems." Lily Sturmann, **Shuwen Jethro Sun**, Rajul Kumar, Vladimir Pchelin, Orran Krieger, Peter Portante, Raja Sambasivan. Poster at *2017 MOC Annual Workshop.* Boston, MA

Teaching Experience

Spring 2025 **Teaching Assistant**,
CS 3650 Computer Systems, Northeastern
Course instructors: Peter Desnoyers.

Spring 2024 **Head Teaching Assistant**,
CS 3650 Computer Systems, Northeastern
Course instructors: Peter Desnoyers and Cheng Tan.

Fall 2023 **Teaching Assistant**,
CS 5600 Computer Systems, Northeastern
Course instructors: Peter Desnoyers.

Fall 2021 **Teaching Assistant**,
CS 3700 Networks and Distributed Systems, Northeastern
Course instructors: David Choffnes, Sakib Miazi, Christo Wilson.

Professional Service

To Northeastern University *&* Khoury College:

3/2025 • **Panelist** — 2025 Ph.D. Open House Graduate Student Panel

9/2023-1/2024 • **Organizing committee *&* Program committee *&* Session chair** — 2nd Khoury Systems Day

1/2023 • **General Chair *&* Session Chair** — 1st Khoury Systems Day

7/2021 • **Co-organizer *&* panelist** — Workshop on Completing PhD Course Requirements at Khoury

3/2021 • **Moderator** — 2021 Ph.D. Open House Graduate Student Panel

1/2021 • **Ph.D. Open House Co-organizer** — 2021 Ph.D. Open House

1/2021 – 05/2022
- **Organizing member** — Khoury Graduate Students Association

12/2020
- **Ph.D. Admission Volunteer** — 2021 Ph.D. Admission

3/2020
- **Panelist** — 2020 Ph.D. Open House Graduate Student Panel

9/2019
- **Panelist** — 2019 Ph.D. Orientation

3/2019
- **Letter writer** — Khoury College Naming Ceremony Thank you Gift

3/2019
- **Panelist** — 2019 Ph.D. Open House Graduate Student Panel

Spring 2019
- **Co-organizer** — Systems and Networking Reading Group

To the Discipline:

2025
- **Program Committee** — ACM SoCC

2025
- **Reviewer** — Computer Networks

2025
- **Reviewer** — IEEE Internet of Things Journal 2025

2024
- **Reviewer** — Peer-to-Peer Networking and Applications 2024

2024
- **Reviewer** — IEEE TIFS 2024

2021
- **External Reviewer** — CCS 2021

2020
- **Organizing Volunteer** — SIGCOMM 2020 Hallway Sessions

2020
- **External Reviewer** — IMC 2020

2019
- **External Reviewer** — NSDI 2020

Summer 2017
- **Layer 9 Scriber** — SIGCOMM 2017

Personal Trivia

Languages: English (professional proficiency), Mandarin (native)

Affiliations

- Khoury College of Computer Sciences, Northeastern University
- MOC Alliance

References

Peter Desnoyers, Associate Professor
Northeastern University
✉ pjd@ccs.neu.edu

Ji-Yong Shin, Assistant Professor
Northeastern University
✉ j.shin@northeastern.edu

Orran Krieger, Research Professor
Boston University
✉ okrieg@bu.edu

Vasilis Pappas, Tech Lead
Google Global Networking
✉ vasilis@google.com