

Sachin Ashok

🏠 sachin.cs.illinois.edu ✉ sachinashok.g@gmail.com
in [LinkedIn](#) 🎓 [Google Scholar](#) 🐙 [GitHub](#)

RESEARCH INTERESTS

Broadly interested in networked systems with recent emphasis on enhancing performance, monitoring, and root cause analysis for microservices and cloud systems.

EDUCATION

- 2021 - **PhD.** in Computer Science; CGPA: 4.0
University of Illinois at Urbana-Champaign
Advisors: **Prof. Radhika Mittal**, **Prof. Philip Brighten Godfrey**
- 2014 – 2018 **B.Tech.** in Computer Science and Engineering
National Institute of Technology, Trichy

PUBLICATIONS

TraceWeaver: Blackbox Request Tracing for Modern Cloud Applications

Sachin Ashok, Vipul Harsh, Brighten Godfrey, Radhika Mittal, Srinivasan Parthasarthy, Larisa Shwartz
Under review at ACM SIGCOMM, 2024.

Murphy: Performance Diagnosis of Distributed Cloud Applications

Vipul Harsh, Wenxuan Zhou, **Sachin Ashok**, Radhika N. Mysore, Brighten Godfrey, Sujata Banerjee
In Proceedings of ACM SIGCOMM, 2023.

Fast and Efficient Look-Ups via Data-Driven FIB Designs

Sachin Ashok*, Aditi Partap*, Ammar Tahir* (* = equal contribution)
In Proceedings of ACM SIGCOMM FIRA Workshop, 2022.

Data-Driven Network Path Simulation with iBox

Sachin Ashok, Shubham Tiwari, Nagarajan Natarajan, Venkat Padmanabhan, Sundararajan Sellamanickam
In Proceedings of ACM SIGMETRICS, 2022.

Leveraging Service Meshes as a New Network Layer

Sachin Ashok, P. Brighten Godfrey, Radhika Mittal
In Proceedings of ACM HotNets, 2021.

iBox: Internet in a Box

Sachin Ashok, Sai Surya Duvvuri, Nagarajan Natarajan, Venkat Padmanabhan, Sundararajan Sellamanickam, Johannes Gehrke
In Proceedings of ACM HotNets, 2020.

Reinforcement Learning for Bandwidth Estimation and Congestion Control in Real-Time Communications

Joyce Fang, Martin Ellis, Bin Li, Siyao Liu, Yasaman Hosseinkashi, Michael Revow, Albert Sadovnikov, Ziyuan Liu, Peng Cheng, **Sachin Ashok**, David Zhao, Ross Cutler, Yan Lu, Johannes Gehrke
In Proceedings of NeurIPS MLForSystems workshop, 2019.

INDUSTRY EXPERIENCE

- 2018 - 2020 **Microsoft Research, India** **Research Fellow**
Mentors: **Venkat Padmanabhan**, **Naga Natarajan**, **Sundar Sellamanickam**, **Johannes Gehrke**
- **iBox: Internet in a Box**: Designed a data-informed network simulator for recreating the behaviour of paths in a target network such as the Internet.
Published at SIGMETRICS'22.

- **R3Net: Reinforcement Learning for Bandwidth Control**: Developed realistic network environments to train RL agents for bandwidth estimation & congestion control.
Published at MLForSystems'19.

2016 - 2017 **Mozilla Organization** **Intern**
Mentors: **Franziskus Kiefer, Tim Taubert**

- **Blake2 support for Mozilla's NSS library**: Implemented a Blake2 (a cryptographic hash function) module for Mozillas Network Security Services (NSS) library.

2017 **Samsung R&D, India** **Intern**
Mentors: **Pratibha Moogi, Karthikeyan Somanathan**

- **Object localization framework**: Developed an end-to-end pipeline to leverage deep learning models using custom convolutional neural networks for localization of objects in a given image.

INVITED TALKS

- Distributed Tracing without the Pain!
KubeCon 2022, Detroit, USA
- Fast and Efficient Lookups via Data-Driven FIB Designs (presented virtually)
FIRA@SIGCOMM 2022, Amsterdam, Netherlands
- Data-Driven Network Path Simulation with iBox
ACM SIGMETRICS 2022, Indian Institute of Technology Bombay (IIT-B), India
- Leveraging Service Meshes as a New Network Layer (presented virtually)
CSL Student Conference 2022, University of Illinois at Urbana-Champaign
- Leveraging Service Meshes as a New Network Layer (presented virtually)
HotNets 2021, University of Cambridge, Virtual Event
- iBox: Internet in a Box (presented virtually)
HotNets 2020, University of Chicago, Virtual Event
- iBox: Internet in a Box for Realistic Network Simulation
Bandwidth Control Workshop 2019, Microsoft Research, Redmond

HONORS

- Invited for student panel discussion at **NetworkingChannel 2024**.
- Awarded student grant/ invite to attend **SIGMETRICS'22, SIGCOMM'23, HotNets'23**.
- Invited for project demo at **Microsoft TechFest** (Seattle), 2020.
- Finalist, **Pragyan CTF**, an international level security contest held by **NIT Trichy**, 2018.
- Among top 100 chosen by **IISc, Bangalore** for **CSA Undergraduate Summer School**, 2017.
- Among top 25 chosen by **IMSc, Chennai** for **Summer Research Program**, 2017.
- Among 45 chosen worldwide for **Mozilla Winter of Security**, 2016.

SKILLS AND BACKGROUND

- Languages: C++, C, Python, Golang, Bash
- Tools: Kubernetes, Docker, eBPF, Istio, Protobuf, ns-2/3, gRPC
- Courses taken: Advanced Networking (CS538), Advanced Operating Systems (CS523), Reliability of Cloud Systems (CS 598), High-Speed and Programmable Networks (CS 598 RM), Advanced Distributed Systems (CS 525)