

Archit Bhatnagar

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Education

University of Michigan, Ann Arbor

Ann Arbor, USA

PhD, Computer Science - **GPA: 4.0/4.0**

Aug. 2024 - Present

Advised by: Prof. Ang Chen

Birla Institute of Technology and Science(BITS), Pilani

Pilani, India

B.E. Computer Science

Aug. 2019 - June 2023

Thesis: Secure-In-Band-communication-using-Programmable-switches.

National University of Singapore

Publications

Managing Congestion Control Heterogeneity on the Internet with Approximate Performance Isolation

Ayush Mishra, **Archit Bhatnagar**, Yixuan Zhang, Raj Joshi, Gao Ya, Ben Leong

To appear in *USENIX Symposium on Networked Systems Design and Implementation (NSDI '26)*, 2026

A Case for Learned Cloud Emulators

Archit Bhatnagar, Yiming Qiu, Sarah McClure, Sylvia Ratnasamy, Ang Chen

To appear in *ACM Workshop on Hot Topics in Networks (HotNets'25)*, 2025

Secure Vickrey Auctions for Online Advertising

Archit Bhatnagar, Yunming Xiao, Ang Chen, Amrita Roy Chowdhury

In submission, 2025

A Case for Remote Direct Code Execution

Yibo Huang, Yiming Qiu, Daqian Ding, PTJ. Kon, Yiwen Zhang, Yuzhou Mao, **Archit Bhatnagar**, Mosharaf Chowdhury, Srinivas Devadas, Jiarong Xing, Ang Chen

To appear in *ACM Workshop on Hot Topics in Networks (HotNets'25)*, 2025

Exposing RDMA NIC Resources for Software-Defined Scheduling (Best Paper Award!)

Yibo Huang, Yiming Qiu, Yunming Xiao, **Archit Bhatnagar**, Sylvia Ratnasamy, Ang Chen

Proceedings of the 9th Asia-Pacific Workshop on Networking, 2025

Cloud Infrastructure Management in the Age of AI Agents

Z. Yang*, **Archit Bhatnagar***, Y. Qiu*, T. Miao, PTJ. Kon, Y. Xiao, Y. Huang, M. Casado, Ang Chen

SIGOPS Operating Systems Review, 2025

P4EAD: Securing the In-band Control Channels on Commodity Programmable Switches

Archit Bhatnagar*, Xin Zhe Khooi*, Cha Hwan Song, Mun Choon Chan

Proceedings of the 6th European P4 Workshop (EuroP4 '23), 2023

Poster: Towards Accelerating the 5G Centralized Unit with Programmable Switches

XZ. Khooi, **Archit Bhatnagar**, SK. Permal, Nishant Budhdev, Cha Hwan Song, Mun Choon Chan

Proceedings of the ACM SIGCOMM 2023 Conference, 2023

Research & Work Experience

UseSys Lab, University of Michigan

Ann Arbor, USA

Graduate Research Assistant, Advisor: Prof. Ang Chen

Aug 2024 - Present

- Working on problems at the intersection of AIOps and formal methods for efficient and reliable Cloud systems.
- Designed and implemented a new cryptographic protocol and system to secure auctions for online advertisements.

Systems & Networking Lab, NUS

Singapore

Research Assistant, Advisor: Prof. Ben Leong

Sept 2023 - June 2024

- Worked with ns-3 and P4 to design and implement a novel queuing mechanism for approximate performance isolation.
- Implementing and verifying components for a P4Campus-like infrastructure for Internet measurements at the NUS School of Computing.

Communication and Internet Research Lab, NUS

Singapore

Research Intern, Advisor: Prof. Chan Mun Choon

Jan 2023 - July 2023

- Worked on securing in-band control channels on programmable switches implementing authenticated encryption.
- Offloaded core 5G CU functionalities on a Tofino switch, improving the median latency by upto 80 times.

Samsung Research

Delhi, India

Intern

June 2022 - July 2022

- Worked on integration of temporally encoded video formats(H.264) in USB Video Class(UVC) 1.1.
- Analyzed UVC 1.1 and 1.5 revisions, adapted the extension unit for dependency on stream-based payload formats.

LiveSmart

Remote

Research Intern, Advisor: Prof. Kamlesh Tiwari

February 2022 - May 2022

- Developed a vision-based model to detect joint mobility problems among seniors using gait recognition.
- Reviewed and designed motion characteristics to help detect joint mobility problems with a 96% accuracy.

CEERI-CSIR, Chennai

Chennai, India

Research Intern

June 2021 - July 2021

- Implemented Local Binary Patterns (CLBP & MRELBP) using Tensorflow for texture classification.
- Improved accuracy by 5%(86 to 91%) using Deep Learning architectures like Bilinear CNNs and AlexNet.

Teaching Experience

Teaching Assistant

Sept 2022- Dec 2022

- Teaching Assistant for undergraduate class at BITS, CS F432-Computer Architecture with around 250 students.
- Conducted weekly lab sessions for the entire cohort in Verilog-HDL advised by Dr. Sudeept Mohan

Service

- 2025 **Artifact Evaluation Committee**, USENIX Symposium on Operating Systems Design and Implementation (OSDI'25)

Scholarships Awarded

- 2023 **BITS Pilani International Program and Collaboration Division financial aid**, for doing an off-campus thesis at NUS. Pilani, India
- 2019 **HScTSS (Haryana Science Talent Search Scheme)**, Rs.36,000 for NTSE Stage -1, by SCERT Haryana Haryana, India

Achievements

- JEE (Mains)-Obtained a rank of 5389 among 1.2 million students(top 0.5 %ile) who appeared for the test in 2019
- CBSE Board Examinations- Obtained 95.8% marks in the Science Stream(with Computer Science), was in the top 0.1 %ile among 1.3 million students in 2019.

Technical Skills

Programming/Scripting C/C++, Rust, Python, Verilog, Git, Bash | **Tools:** Mininet, Scapy, ns-3
Programmable Networking **Data Plane:** P4₁₆ | **Arch:** V1Model, TNA | **Control Plane:** BfRt, OpenFlow, POX
ML/DL Libraries TensorFlow, OpenCV, Mediapipe, Sklearn