Ayush Goel

Last updated: January 2026

Email: ayushgoel.cs@gmail.com
Website: goelayu.github.io
Phone: +1 (734) 773-5216
Github: goelayu
Google Scholar: Link

1128 Pomeroy Ave
Santa Clara, CA, US

Research Interests

I am a software systems researcher who is passionate about building high performance systems. A key theme across my several research projects has been to extract relevant runtime properties often with the help of code instrumentation in order to optimize end-to-end system performance and correctness. My research has spanned various different domains ranging from root cause analysis of correctness bugs, web performance, distributed crawling, geo-distributed consensus and more recently systems for ML, and CXL based disaggregated memory systems. My research has been published at top-tier venues for networking (NSDI, CoNEXT, HotNets), operating systems (OSDI) and software engineering (FSE) to name a few.

Areas: Systems for ML, Program analysis, Distributed systems

Education

2023 **PhD in Computer Science**, University of Michigan, Systems Lab
Ann Arbor, Michigan, USA
Thesis: "Fine-grained analysis of web computations to enable improved access to web pages"
Advisors: Harsha V. Madhyastha, Ravi Netravali

2019 **MSc in Computer Science**, University of Michigan, Systems Lab
Ann Arbor, Michigan, USA
Advisor: Harsha V. Madhyastha

2016 **B.Tech in Computer Science**
Indraprastha Institute of Information Technology
New Delhi, India
Thesis: "Safely upgrade application binaries using dynamic analysis"
Advisor: Rahul Purandare

Work Experience

2024 – Present **Meta, California**, Research Scientist
Network.AI Group
- Next-generation networked systems infrastructure for GenAI applications

2023 – 2024 **Hewlett Packard Labs, California**, Systems Research Scientist
Networking and Distributed Systems Lab (NDSL)
- Systems for ML: Leading several projects for optimizing LLM training and inferencing
- CXL based disaggregated memory systems

2017 – 2023 **University of Michigan, Ann Arbor**, Research Assistant
Advisors: Harsha V. Madhyastha, Ravi Netravali
- Designed web systems to reduce web pages' loading latency and enable efficient archiving by leveraging data-flow and control-flow analysis to extract runtime properties of web computations.
- Worked on designs for cross data-center storage systems and wide area networks to offer predictable performance and low cost.

2016 – 2017 **IBM Research Lab, Delhi**, Research Engineer
High Performance Computing (HPC)
Supervisor: Yogish Sabharwal
- Optimized performance of Cuda libraries tailored towards IBM cloud's Watson Machine Learning offerings
- Worked on scalable lifecycle management (deployment, scheduling, resiliency, fault tolerance) of deep learning jobs in IBM Watson Deep Learning as a Service product.

Summer 2016 **IBM Research Lab, Delhi**, Research Intern
Cloud Computing
Supervisor: Mohan Dhawan
- Designed a diagnostic tool to perform root cause analysis of performance and operational faults in OpenStack, a cloud management stack.

Summer 2016 **Google Summer of Code**, Code developer
GNU GCC

2015 – 2015 **Amazon**, Software Engineering Intern
Fullfillment By Amazon (FBA)
- Designed web widgets for Webstore by Amazon (WBA) service used by 100,000+ providers.

Awards and Honors

2023	IIPC'23 Student Travel Grant
2022	HotNets'22 Student Travel Grant
2022	OSDI'22 Student Travel Grant
2021	Highest Score for Graduate Student Instructor
2016	FSE'16 Student Travel Grant
2016	Academic Excellence Award, IIIT Delhi
2015	Awesome Amazonian Intern Award
2012	CBSE 12th Grade Math Award (Given to 0.1% of students)

Research Publications

Manuscripts

Under submission Author list redacted. *"AetherLLM: A Unified Software Stack for LLM Inferencing"*

Under submission Author list redacted. *"RICH: Recursive In-network Cache Coherency in CXL"*

Under submission Author list redacted. *"Hyve: The Hyper-Collective Framework"*

EuroSys'26 Sudipta Saha Shubha, **Ayush Goel**, Diman Zad Tootaghaj, Khaled Diab, Hardik Soni, K. K. Ramakrishnan, Puneet Sharma, Haiying Shen. *"AdaGen: Workload-Adaptive Cluster Scheduler for Latency-Optimal LLM Inference Serving"*

NSDI'24 **Ayush Goel**, Jingyuan Zhu, Ravi Netravali, Harsha V. Madhyastha. *"Sprinter: Speeding Up High-Fidelity Crawling of the Modern Web"*

Preprint'22 Muhammed Uluyol, **Ayush Goel**, Harsha V. Madhyastha, Ben Zhang, Jonathan Zolla, Chi-Yao Hong, Sankalp Singh, Kirill Mendelev, Dina Papagiannaki, Amin Vahdat. *"Highly Available Bandwidth Guarantees on Highly Utilized Cloud WANs,"* **Preprint 2022.**

HotNets'22 **Ayush Goel**, Jingyuan Zhu, Harsha V. Madhyastha. *"Making links on your web pages last longer than you,"* **ACM HotNets 2022.**

OSDI'22 **Ayush Goel**, Jingyuan Zhu, Ravi Netravali, Harsha V. Madhyastha. *"Jawa: Web Archival in the Era of JavaScript,"* **USENIX OSDI 2022.**

OSDI'21 Shaghayegh Mardani, **Ayush Goel**, Ronny Ko, Harsha V. Madhyastha, Ravi Netravali *"Horcrux: Automatic JavaScript Parallelism for Resource-Efficient Web Computation,"* **USENIX OSDI 2021.**

HotMobile'21 **Ayush Goel**, Vaspol Ruamviboonsuk, Ravi Netravali, Harsha V. Madhyastha *"Rethinking Client-Side Caching for the Mobile Web,"* **ACM HotMobile 2021.**

NSDI'20 Muhammed Uluyol, Anthony Huang, **Ayush Goel**, Mosharaf Chowdhury, Harsha V. Madhyastha *"Near-Optimal Latency Versus Cost Tradeoffs in Geo-Distributed Storage,"* **USENIX NSDI 2020.**

CoNEXT'16 **Ayush Goel**, Sukrit Kalra, Mohan Dhawan *"GRETEL: Lightweight Fault Localization for OpenStack,"* **ACM CoNEXT 2016.**

FSE'16 **Ayush Goel***, Sukrit Kalra*, Dhriti Khanna, Mohan Dhawan, Subodh Sharma, Rahul Purandare *"POLLUX: safely upgrading dependent application libraries,"* **ACM FSE 2016.**

Posters

OSDI'22 **Ayush Goel**, Jingyuan Zhu, Ravi Netravali, Harsha V. Madhyastha. *"Jawa: Web Archival in the Era of JavaScript,"* **USENIX OSDI 2022.**

NSDI'20 Muhammed Uluyol, Anthony Huang, **Ayush Goel**, Mosharaf Chowdhury, Harsha V. Madhyastha *"Near-Optimal Latency Versus Cost Tradeoffs in Geo-Distributed Storage,"* **USENIX NSDI 2020.**

Open-source Artifacts

2023 **Sprinter**
A high performance perfect fidelity web crawler that leverages compute memoization techniques to significantly improve crawling throughput by eliminating the need of a browser.
https://github.com/goelayu/Sprinter

2022 **Jawa**
A web archival crawler that significantly reduces storage overhead of archiving web pages while improving fidelity of archived pages.
https://github.com/goelayu/Jawa

2022 **Oblique**
Modified the original concolic execution engine for JavaScript execution to support multi threading
https://github.com/goelayu/oblique

2020 **Mahimahi**
Fixed various recording issues with the open-sourced record-replay toolkit from MIT.
https://github.com/goelayu/mahimahi

Teaching Experience

Winter 2022 **University of Michigan, EECS 491**
Introduction to Distributed Systems
Graduate Student Instructor (TA) with Prof. Harsha V. Madhyastha
100+ students

Fall 2019 **University of Michigan, EECS 491**
Introduction to Distributed Systems
Graduate Student Instructor (TA) with Prof. Harsha V. Madhyastha
100+ students

Winter 2016 **IIIT Delhi, CSE 519**
Modern Algorithm Design
Teaching Assistant with Prof. Rajiv Raman
40+ students

Fall 2015 **IIIT Delhi, CSE 231**
Operating Systems
Head Teaching Assistant with Prof. Pushpendra Singh
150+ students

Invited Talks

November 2022 **ACM HotNets Workshop**
Making links on your Web Pages last longer than you

July 2022 **USENIX OSDI**
Jawa: Web archival in the era of JavaScript

May 2022	**IIPC Web Archiving Conference** Improve the fidelity of web archives
May 2021	**IIPC Web Archiving Conference** Lightning talk: Web archives and storage overheads
March 2021	**ACM HotMobile** Rethinking client-side caching for the mobile web
June 2020	**Google Web Performance Workshop** Reusing JavaScript execution to improve mobile web performance

Selected Professional Service

2026	Program Committee for CoDAIM
2025	Program Committee for NSDI
2025	Program Committee for PACMI
2024	Technical Program Committee for NSDI
2022	Artifact Evaluation Committee for SIGCOMM
2022	Artifact Evaluation Committee for OSDI
2022	Artifact Evaluation Committee for ATC
2022	Artifact Evaluation Committee for Eurosys
2021	Artifact Evaluation Committee for OSDI

Outreach Activities

2018 – Present	**Graduate Rackham International, Board Member** Student organization advocating for rights of international students *Chair of Diversity, equity, inclusion* *Co-Chair of Outreach*

References

Harsha V. Madhyastha
Associate Professor, University of Southern California
Adjunct Associate Professor, University of Michigan
harshavm@umich.edu

Ravi Netravali
Assistant Professor, Princeton University
rnetravali@cs.princeton.edu