Divyanshu Saxena

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Education

2026 (Expected) **The University of Texas at Austin** | *Ph.D. in Computer Science*
Advisor: Prof. Aditya Akella

2020–2021 (Transferred) **University of Wisconsin-Madison** | *Ph.D. in Computer Science*
Advisor: Prof. Aditya Akella

2020 **Indian Institute of Technology, Delhi** | *B.Tech. in Computer Science and Engineering*

Research Direction

Computer systems must meet stringent *latency* (e.g., sub-second request completion) and *resource* (e.g., scaling to meet request bursts) requirements under dynamic conditions. This demands *adaptive and robust policies* across the stack. My research combines ideas from *Machine Learning (ML)*, *Optimization*, *Programming Languages*, and *Formal Methods* into computer systems to tackle these challenges through two complementary directions:

- *Abstractions and controllers for modern applications:* I have devised novel *abstractions*, intuitive *interfaces* and optimal *controllers* to address challenges in *communication* [3, 10] and *resource management* [2, 5, 11, 14] for microservice and serverless applications.
- *ML for the OS:* I have developed a range of *ML-driven policies* – from *neural networks for critical-path decisions* [12] to *encoders* [6], and *LLMs* [7] for various OS policies, along with techniques to *robustify* their operations using formal verification [1], analytical models [11] and monitoring frameworks [8].

Publications

Peer-Reviewed Conference Publications

EuroSys '26 *Canopy: Property-Driven Learning for Congestion Control.* [1]
Chenxi Yang, Divyanshu Saxena*, Rohit Dwivedula*, Kshiteej Mahajan, Swarat Chaudhuri, and Aditya Akella.

ICLR '25 *CONGO: Compressive Online Gradient Optimization.* [2]
Jeremy Carleton, Prathik Vijaykumar, Divyanshu Saxena, Dheeraj Narasimha, Srinivas Shakkottai, and Aditya Akella.

ASPLOS '25 *Copper and Wire: Bridging Expressiveness and Performance for Service Mesh Policies.* [3]
Divyanshu Saxena, William Zhang, Shankara Pailoor, Isil Dillig, and Aditya Akella.
Also appeared as a poster in NSDI'23.

SoCC '23 *Yama: Providing Performance Isolation for Black-Box Offloads.* [4]
Tao Ji, Divyanshu Saxena, Brent E. Stephens, and Aditya Akella

EuroSys '22 *Memory Deduplication for Serverless Computing with Medes.* [5]
Divyanshu Saxena, Tao Ji, Arjun Singhvi, Junaid Khalid, and Aditya Akella.
Also appeared as an invited paper in SIGOPS Operating Systems Review.

Peer-Reviewed Workshop Papers

MLForSys at NeurIPS '25 *A Joint Learning Approach to Hardware Caching and Prefetching.* [6]
Samuel Yuan, Divyanshu Saxena, Jiayi Chen, Nihal Sharma, and Aditya Akella.

HotNets '25 *Man-Made Heuristics Are Dead. Long Live Code Generators!* [7]
Rohit Dwivedula, Divyanshu Saxena, Aditya Akella, Swarat Chaudhuri, and Daehyeok Kim.

HotOS '25 *How I learned to stop worrying and love learned OS policies.* [8]
Divyanshu Saxena*, Jiayi Chen*, Sujay Yadalam, Yeonju Ro, Rohit Dwivedula, Aditya Akella, Christopher Rossbach, and Mike Swift.

MLForSys at NeurIPS '23 *On a Foundation Model for Operating Systems.* [9]
Divyanshu Saxena, Nihal Sharma, Donghyun Kim, Rohit Dwivedula, Jiayi Chen, Chenxi Yang, Sriram Ravula, Zichao Hu, Aditya Akella, Sebastian Angel, Joydeep Biswas, Swarat Chaudhuri, Isil Dillig, Alex Dimakis, P. Brighten Godfrey, Daehyeok Kim, Chris Rossbach, and Gang Wang.

ApPLIED at PODC '23 *Invited Paper: Towards Efficient Microservice Communication.* [10]
Divyanshu Saxena, William Zhang, Madhav Tummala, Saksham Goel, and Aditya Akella.

Preprints and Manuscripts Under Submission

Under Submission *Performance Robustness Certificates for Microservices.* [11]
Divyanshu Saxena, Gaurav Vipat, Jiaxin Lin, Jingbo Wang, Isil Dillig, Sanjay Shakkottai, and Aditya Akella.

Under Submission *Tuning the 'one big node' abstraction in NUMA systems.* [12]
Gaurav Vipat, Divyanshu Saxena, Sujay Yadalam, Jiaxin Lin, and Aditya Akella.

Under Submission *Fast Userspace Networking for the Rest of Us.* [13]
Alireza Sanaee, Vahab Jabrayilov, Ilias Marinos, Anuj Kalia, Divyanshu Saxena, Prateesh Goyal, Kostis Kaffes, and Gianni Antichi.

2023 *Dirigo: Self-scaling Stateful Actors For Serverless Real-time Data Processing.* [14]
Le Xu, Divyanshu Saxena, Neeraja J. Yadwadkar, Aditya Akella, and Indranil Gupta.

Work Experience

Summer 2025 **M365 Research** | *Research Intern with Systems Innovation Group*
Developed LLM agents for automated service migration and designed benchmarking methodologies.

Summer 2022 **Microsoft Research** | *Research Intern at Networking Research Group*
Developed the transport for a userspace network stack for containerized cloud tenants.

Feb-Oct 2020 **Joint Seat Allocation Authority (JoSAA)** | *Software Intern*
Developed and managed the database and website for the Joint Engineering Examination (JEE)-Advanced.

Jul-Sep 2020 **Indian Institute of Science, Bangalore** | *Research Intern with Prof. Yogesh Simmhan*
Designed adaptive consistency models for Distributed Edge Storage.

Summer 2019 **Cohesity** | *Member of Technical Staff Intern*
Worked on adding zero-copy buffer payloads over gRPC

Summer 2018 **National University of Singapore** | *Research Intern with Prof. Andrew Lim*
Designed heuristics to solve the two-echelon Vehicle Routing Problem.

Scholastic Achievements

2022, 2025 **Student Travel Grants** to attend EuroSys 2022, ASPLOS 2025 and HotOS 2025.

2023, 2025 **Professional Development Award** at UT Austin for Summer 2023, Spring 2025.

2020 **Departmental Scholarship** of USD 3000 for the academic session 2020-21 at UW-Madison.

2016 **All India Rank 64** in Joint Entrance Exam (Advanced) among 1.5 million applicants.

2015 **All India Rank 61** in Kishore Vaigyanik Protasahan Yojana (KVPY) conducted by IISc Bangalore.

2017 Felicitated with **Design Innovation Summer Award** – 2017 by the Ministry of Human Resource Development (MHRD), given to selected projects from IIT Delhi, for the project *Person Counter and Display Device*

2016 Qualified the **National Standard Examination** in Physics (NSEP) and Chemistry (NSEC).

2012 Conferred a nine-year scholarship on qualifying **National Talent Search Examination** (2012), conducted by NCERT.

Teaching Experience

Spring 2025 Guest Instructor | Principles of Learned Systems, at UT Austin

Fall 2023 Mentor | Directed Reading Program (DiRP) on "Emerging Cloud Infrastructure"

Fall 2020 Teaching Assistant | Programming III, at UW-Madison

Fall 2019 Teaching Assistant | Artificial Intelligence, at IIT Delhi

Service

Program Committee | SoCC 2025

Reviewer | Journal for Systems Research 2025, ML for Systems Workshop at NeurIPS 2025

Student Volunteer | HotNets 2022 hosted in Austin

Artifact Evaluation Committee | SOSP 2023, OSDI 2022, ATC 2022

Mentorship

2022-23 William Zhang | B.S., UT Austin → Roblox
Project: A new language for service mesh policies

2024-25 Samuel Yuan | B.S., UT Austin → OpenAI
Project: Joint learning for hardware caching and prefetching

2024-25 Ebaad Imran | B.S., UT Austin → Optiver
Project: Joint autoscaling and admission control for microservices

2024-Ongoing Gaurav Vipat | Pre-doctoral Researcher, UT Austin
Project: Tuning NUMA configuration knobs for improved performance

2025-Ongoing Diego Wearden | B.S., UT Austin
Project: Exploring vulnerabilities with learned CPU load balancing in the OS kernel

2025-Ongoing William Wang | B.S., UT Austin
Project: Implementing guardrails for OS policies