Rohit Dwivedula

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Research Interests

ML for Systems, Robotics, AI Infrastructure, Operating Systems

Education

University of Texas at Austin 2023 – present
PhD Computer Science. Advised by Aditya Akella and Daehyeok Kim. *Austin, TX*

Birla Institute of Technology and Science (BITS), Pilani 2017 – 2021
Bachelor's in Computer Science & Minor in Physics. GPA: 9.10/10 (Distinction) *Hyderabad, India*

Work Experience

AMD Research May 2024 – Aug 2024
R&D Intern *Austin, TX*

- Developed an analytical simulator to model network usage (e.g., latency, bandwidth) of modern deep learning workloads such as LLMs and state space models on large-scale AMD GPU clusters.
- Enabled Chakra trace collection on AMD hardware, allowing for cross-platform compatibility (e.g. with Nvidia).
- Designed algorithms to enable efficient multi-tenant training and inference of LoRA-finetuned models.

Microsoft Research Aug 2021 – Aug 2023
Research Fellow *Bengaluru, India*

- Worked in the AI Infrastructure team on making deep neural network (DNN) training and inference more efficient.
- Analyzed GPU usage patterns of hundreds of internal DNN jobs, pinpointing models underutilizing GPUs.
- Other tasks: LM distillation; LM benchmarking; debug failures on-call during LLM (50B+ params) training; experimenting with modifications to existing neural architectures; optimizing mixture-of-expert training

Microsoft Research Jan 2021 – Jul 2021
Research Intern *Bengaluru, India*

- Designed and built *TrustRate*, a privacy-preserving polling system using multiple cryptographic primitives. [paper]
- Implemented the cryptographic primitives in C++, built an E2E prototype, and benchmarked it on a testbed of 2200 nodes on Azure spread across three WAN regions. Achieved a throughput of > 4.5 million votes per day.

Selected Publications

- ***Rohit Dwivedula***, *Sadanand Modak, Aditya Akella, Joydeep Biswas, Daehyeok Kim, Christopher J. Rossbach.* ConfigBot: Adaptive Resource Allocation for Robot Applications in Dynamic Environments. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2025).

- ***Rohit Dwivedula***, *Divyanshu Saxena, Aditya Akella, Swarat Chaudhuri, Daehyeok Kim.* PolicySmith: Man-Made Heuristics Are Dead. Long Live Code Generators! Preprint.

- *Divyanshu Saxena, Jiayi Chen, Sujay Yadalam, Yeonju Ro,* ***Rohit Dwivedula***, *Eric H Campbell, Aditya Akella, Christopher J Rossbach, Michael Swift.* How I learned to stop worrying and love learned OS policies. Proceedings of the 2025 Workshop on Hot Topics in Operating Systems (HotOS 2025).

- ***Rohit Dwivedula***, *Sriram Sridhar, Sambhav Satija, Muthian Sivathanu, Nishanth Chandran, Divya Gupta, Satya Lokam.* TrustRate: A Decentralized Platform for Hijack-Resistant Anonymous Reviews. Poster at The 24th Privacy Enhancing Technologies Symposium (2024).

- *Chenxi Yang, Divyanshu Saxena,* ***Rohit Dwivedula****, Kshiteej Mahajan, Swarat Chaudhuri, Aditya Akella.* C3: Learning Congestion Controllers with Formal Certificates. Preprint.
- *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, Gang Wang.* On a Foundation Model for Operating Systems. Machine Learning for Systems Workshop at 37th NeurIPS Conference (2023).

Other Publications

- *Haoyu Li, Yuchen Xu, Jiayi Chen,* ***Rohit Dwivedula****, Wenfei Wu, Keqiang He, Aditya Akella, Daehyeok Kim.* Accelerating Distributed Deep Learning using Lossless Homomorphic Compression. Preprint (2024).
- ***Rohit Dwivedula****, Rampalli Madhuri, Komaragiri Srinivasa Raju, Arunachalam Vasan.* Multiobjective optimization & cluster analysis in the placement of BMPs in an urban flooding scenario. Water Science & Technology 84 (4): 966–984. (2021).
- ***Rohit Dwivedula*** *& Mohan Vamsi Nallapareddy (equal contribution).* ABLE: Attention Based Learning for Enzyme Classification. Computational Biology and Chemistry vol. 94, p. 107558 (2021).
- *Sanket Mishra,* ***Rohit Dwivedula****, Varad Kshirsagar, Chittaranjan Hota.* Robust Detection of Network Intrusion using Tree-based Convolutional Neural Networks. 8th ACM IKDD CODS & 26th COMAD (2021).
- *Sanket Mishra, Varad Kshirsagar,* ***Rohit Dwivedula****, Chittaranjan Hota.* Attention-based Bi-LSTM for Adaptive Anomaly Detection on Time Series. International Conference on Artificial Neural Networks (ICANN), Lecture Notes in Computer Science, vol 12891. Springer (2021).
- ***Rohit Dwivedula*** *& Narasimha Bolloju.* Transitioning from Plan-driven Methods to Agile Methods – Preparation for a Systematic Literature Review. 5th International Conference on Communication and Electronics Systems (2020).

Patent

- *Multi-tenant Training and Inference for Fine-tuned Artificial Intelligence (AI) Models.* Bradford M. Beckmann, Kishore Punniyamurthy, Rohit Dwivedula. Assigned to Advanced Micro Devices, Inc. Filed with USPTO (Apr 2025).

Honors & Awards

- PETS 2024 Travel Grant — 2024
- Professional Development Award, UT Austin — 2024
- BITS Pilani V.S. Rao Award for all-round excellence in research, leadership and volunteering — 2021
- BITS Pilani Merit Scholarship to top 3% of students — 2018

Service & Outreach

- *Graduate Representative Association of Computer Sciences*, UT Austin — 2024 – present
- *Graduate Admissions Student Committee*, UT Austin — 2024
- *Teaching Assistant*, Data Structure & Algorithms (CS F211), BITS Pilani — Spring 2021
- *Coordinator*, Placement Unit, BITS Pilani. Headed a team of ∼80 volunteers. — 2020-21
- *Teaching Assistant*, Software Engineering (IS F341), BITS Pilani — Spring 2020
- *Volunteer Research Intern*, Central Electronics Engineering Research Institute, Chennai — Summer 2019
- *Teaching Assistant*, Computer Programming (CS F111), BITS Pilani — Fall 2018

Graduate Coursework

Principles of Learned Systems, Reinforcement Learning, Systems Security, Cryptography, Advanced Topics in Networking, Computer System Performance Analysis