

Rohit Dwivedula

rohitudwivedula@utexas.edu | (737) 297-0322 | Austin, TX

EDUCATION

University of Texas at Austin

PhD Computer Science. Advised by [Aditya Akella](#) and [Daehyeok Kim](#). GPA: 4.0/4.0

2023 – present

Austin, TX

Birla Institute of Technology and Science (BITS), Pilani

Bachelor's in Computer Science & Minor in Physics. GPA: 9.10/10 (Distinction)

2017 – 2021

Hyderabad, India

WORK EXPERIENCE

Microsoft Research

Research Fellow

Aug 2021 – Aug 2023

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.
- Developed a novel approach to train Mixture-of-Expert language models (LMs) by sharding them into independent experts, removing network bottlenecks. Led to 2x throughput improvement for distributed data-parallel training.
- Other tasks: LM distillation; LM benchmarking; debug failures on-call during large (50B+ params) LM training; experimenting with modifications to existing neural architectures

Microsoft Research

Research Intern

Jan 2021 – Jul 2021

Bengaluru, India

- Designed and built *TrustRate*, a privacy-preserving polling system by fusing multiple cryptographic techniques.
- 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.

PROJECTS

* indicates presented at conference; † indicates published in peer-reviewed journal.

Data plane packet-tracing tool for 5G RAN stacks (ongoing)

- Building a lightweight packet tracing interface in srsRAN to analyze and understand packet flows inside 5G gNB.
- Modeling the flow of packets in first order logic to determine worst-case network bandwidth and latency.

Anomaly Detection and Deep Learning

- Developed *TreeNets*, a hierarchical CNN model for detecting network intrusion. Experimented with five feature selection approaches and achieved an accuracy of 82.16% on the NSL-KDD intrusion detection benchmark.*
- Built an [attention-BiLSTM model](#) to identify anomalies in diverse time-series data such as web requests, traffic and tweets. Evaluated the model on the Numenta Anomaly Benchmark and achieved an average AUC score of 0.73.*
- Built a [sequence-based neural network model](#) to predict protein enzyme class from primary structure and attained an F1-score of 0.83. Used sampling strategies to mitigate data imbalances and statistically validated the findings.†
- Won 2nd place & 50,000 Indian Rupees at InnoHack 7.0 for building a ML predictive maintenance system (2020).

Multi-objective Optimisation for Urban Infrastructure

- Modeled urban flooding in Hyderabad, India as an optimization problem and identified configurations of cost-optimal flood prevention infrastructure to minimize surface runoff and pollutant loads. Implemented six [evolutionary](#) and [fuzzy optimization](#) techniques and identified a pareto-optimal set of solutions.†*

AWARDS & OTHER EXPERIENCES

- **BITS Pilani V.S. Rao Award** for all-round excellence in research, academics, leadership and volunteering (2021).
- **BITS Pilani Merit Scholarship** for academic excellence by being in the top 3% of 1,100 students (2018).
- Undergraduate teaching assistant for Computer Programming (CS F111), Data Structures and Algorithms (CS F211) and Software Engineering (IS F341) at BITS Pilani over three academic terms (2019 - 2021).
- Head of the university's career development center at BITS Pilani. Led a team of over eighty volunteers and connected more than 500 students with job or internship opportunities (2020-21).

TECHNICAL SKILLS

- **Graduate coursework**: Networks, Cryptography, Reinforcement Learning, Learned Systems.
- **Proficient (>10k LoC)**: C++, Python. **Familiar**: Bash, C, Android (Java), SQL, PHP, JavaScript.
- **Tools/Stacks**: PyTorch, Docker, CUDA, GDB, Docker, Django, MERN, NVIDIA Nsight, systemtap, bpftrace.

GitHub: [@rohitudwivedula](#); Google Scholar: [rohitudwivedula](#); LinkedIn: [rohitudwivedula](#)