Parth Thakkar

thakkarparth007@gmail.com | thakkarparth007.github.io

EDUCATION

University of Illinois, Urbana-Champaign **2021-2023**
MS in Computer Science
Graduate Teaching Assistant, CS 411 Database Systems

National Institute of Technology, Trichy **2014-2018**
B.Tech (Hons.) in Computer Science and Engineering
CGPA: 8.89 (Major CGPA: 8.96)

KEY SKILLS

Languages	C++, GoLang, Python, Typescript, Javascript, C, Bash, Java, SQL
Tools & Tech	NodeJS, MongoDB, MySQL, AWS, Azure, Cosmos/Scope, NMon, Git

PUBLICATIONS

1. *Optimizing Network Provisioning through Cooperation*. Under Submission.
   H. Sharma*, **P. Thakkar***, S. Bharadwaj*, R. Bhagwan, V. Padmanabhan (*Equal contributors)
2. *AutoSens: Inferring Latency Sensitivity of Users through Natural Experiments*. ACM IMC 2021.
   P. Thakkar, R. Saxena, V. Padmanabhan
3. *Scaling Hyperledger Fabric using Sparse Peers and Pipelined Execution*. ACM SoCC 2021.
   P. Thakkar & S. Nathan
4. *Performance Benchmarking and Optimizing Hyperledger Fabric Blockchain Platform*. IEEE MASCOTS 2018.
   P. Thakkar, S. Nathan, B. Vishwanathan (**Best Paper Award**)

EXPERIENCE

Microsoft Research, Bangalore *Jul 2019 - Jul 2021*
Research Fellow | Systems & Networking Group

- Working on optimizing WAN bandwidth costs by leveraging first party setting.
- Proposed and implemented a mathematical framework for network provisioning and tested on Microsoft's production WAN.
- Savings in the order of tens of millions of dollars.

IBM Research, Bangalore *Jul 2018 - Jul 2019*
Research Engineer | Blockchain

- Improved performance, scalability & cost-efficiency of Hyperledger Fabric, IBM's Blockchain Platform.
- Introduced a parallelization technique to double CPU utilization and improve throughput by 40%.
- Introduced a sharding technique to make the system horizontally scalable.
- Introduced a mechanism to enable auto-scaling of nodes helping reduce provisioning costs.
- Improved overall throughput by 3.7× and sped up scaling up time by 12-26×.
- Led the project, and wrote a paper which got accepted at ACM SoCC 2021.

Research Intern | Blockchain *May 2017 - Jul 2018*

- Performed the first ever rigorous performance study of Hyperledger Fabric.
- Wrote a generic, highly configurable & reusable load generator, which was used for further studies.
- Made 3 key optimizations that improved performance 16× (from 140tps to 2250tps).
- Received Best Paper Award for the paper (link) published in IEEE MASCOTS describing the work.

Amazon, Chennai *May 2016 - Jul 2016*

Software Engineering Intern | Backend

- Worked on backend stack for Amazon Tech Conf, where Echo devices act as help-desks & MoC's
- Built a fully serverless backend with NodeJS & AWS to power FireOS Apps, Alexa Skill & website
- Integrated it with internal systems & handled Ops of the whole system.

PROJECTS

Learning configuration validators for distributed systems *Sep 2021 - present*

Advisors: Prof. Tianyin Xu, Prof. Madhusudan Parthasarathy | UIUC

- Given Configuration tests $T(Conf) \rightarrow Bool$ that check if a configuration is valid, we aim to generate validator formulas $V(Conf) \rightarrow Bool$ that mimic the test behaviour but are much cheaper to run.
- Working in a team to develop strategies to use dynamic analysis along with program synthesis techniques to learn the validators.

NL2CMD: Converting natural language instructions to Bash *Oct 2021 - present*

Term Project | Advisor: Prof. Heng Ji | UIUC

- Given natural language instructions, we generate bash commands that satisfy the user's intent.
- Attempting to model command *execution* for both verification and training of models.
- Working on a model to incorporate command descriptions in synthesizing commands.

Dalal Street *Oct 2017 - Mar 2018*

Lead Developer | Delta-Force | Github link

- Made a virtual stock market game where players compete against each other and bots to get rich.
- Led a team of programmers to make a realtime platform involving a fast matching engine.
- Used gRPC to support hundreds of concurrent mobile, web and bot clients.
- Received a participation of over 1000+ (human) players as part of Pragyan, Techfest of NIT Trichy.

POSITIONS OF RESPONSIBILITIES

- **Delta Force**
  Program Manager at programming club of NIT-T. Lead several programming projects & conducted workshops for junior students and external colleges
- **Pragyan**
  Manager of Web Operations for Pragyan, techno-management festival of NIT-T

AWARDS AND ACHIEVEMENTS

- ACM SoCC Student Scholarship (2021)
- JN Tata Endowment Scholarship (2020)
- **Best Paper Award** for "Performance Benchmarking & Optimizing Hyperledger Fabric Blockchain Platform" at MASCOTS 2018
- **3rd** in Pragyan CTF (2017)
- **2nd** in Shaastra Programming Challenge, part of IIT Madras' techfest (2017)
- **3rd** in Code-O-Soccer event in IIT Kharagpur's techFest (2016)
- **2nd** in In-Out Hackathon, one of India's largest student-run hackathons (2016)
- **Top 10** in Ingenius Hackathon (2015)

Talks

- Industry talk on "Optimizing the performance of Hyperledger Fabric Platform" at ICDCN 2019
- Conducted workshop on Introduction to Blockchain Systems as a part of Vortex 2018, NIT-T CSE Symposium