



Parth Thakkar

✉ thakkar.parth.d@gmail.com |  thakkar-parth |  thakkarparth007.github.io

EDUCATION

National Institute of Technology, Trichy

2014-18

B.Tech (Hons.) in Computer Science and Engineering

CGPA: 8.89 (Major CGPA: 8.96)

KEY SKILLS

Languages GoLang, Python, Javascript, C, C++, Bash, SQL

Tools & Tech NodeJS, MongoDB, MySQL, AWS, Azure, Cosmos/Scope, NMon, Git

PUBLICATIONS

1. P. Thakkar & S. Nathan: *Scaling Hyperledger Fabric using Sparse Peers and Pipelined Execution* (Under Submission at SIGMOD 2020)
2. P. Thakkar, S. Nathan, B. Vishwanathan: *Performance Benchmarking and Optimizing Hyperledger Fabric Blockchain Platform* MASCOTS 2018 (**Best Paper Award**)

RESEARCH INTERESTS

Systems, Programming Tools

EXPERIENCE

Microsoft Research, Bangalore

Aug 2019 - Present

Research Fellow | Systems & Networking Group

- Working on optimizing WAN bandwidth costs by optimal replica placement in large cloud applications
- Preliminary analysis of WAN bandwidth utilization and cost information shows promise

IBM Research, Bangalore

Jul 2018 - Jul 2019

Research Engineer | Blockchain

- Focused on performance and scalability of Hyperledger Fabric v1.4, IBM's Blockchain Platform, to enable high-throughput applications such as stock-exchange, real-time payment etc.
- Studied various vertical and horizontal scaling techniques for Fabric, found them unsatisfactory
- Introduced pipelined validation to increase CPU util from 50% to 75%
- Introduced "Sparse Peers" that work together to improve validation & commit scalability
- Introduced a mechanism to enable auto-scaling of nodes helping reduce provisioning costs
- Improved overall throughput by 3× and reduced time of syncing new nodes by 96%
- Led the project and submitted a paper on the above work to a top conference

Research Intern | Blockchain

May 2017 - Jul 2018

- Performed the first ever rigorous performance study of Hyperledger Fabric
- Baseline performance of Fabric (140tps) was too low for most enterprise blockchain applications
- Wrote a generic, highly configurable & reusable load generator, which was used for further studies
- Made 3 key optimizations that improved performance 16x (from 140tps to 2250tps)
- Received Best Paper Award for 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

Evaluating Heuristics for Yinsh (board game)

Jan 2018 - May 2018

Bachelor's thesis | [Presentation link](#)

- Worked in a team to develop AI strategies for the strategy game Yinsh
- Developed a C++ simulator for Yinsh. Came up with a bit-board representation to allow fast simulation
- Implemented multiple strategies and benchmarked the results

Applications Portal Generator

Sep 2017 - Oct 2017

Lead Developer | Delta-Force

- Many portals that Delta maintained for college administration were form-heavy, with large number of fields
- Developed a tool to generate such portals easily, as maintaining individual portals was painful & error-prone
- Wrote HTML-based DSL to generate entire portal, along with validation of DSL-code
- Adding features to the DSL-compiler allows enabling features in all portals at once.

Dalal Street

Oct 2017 - Mar 2018

Lead Developer | Delta-Force | [Github link](#)

- 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

Rembook

Mar 2016 - May 2017

Lead Developer | Delta-Force | [Github link](#)

- Developed a web based platform for sharing memories of graduating students
- Took care of performance and scaling of the system
- Application was well-received & heavily used by college community (thousands of requests at peak load)

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

○ Bits & Bytes

Author at NIT-T department magazine. Wrote technical articles on various topics in CS

○ National Service Scheme Organization

Member of the college NSSO chapter to conduct activities for less fortunate kids.

AWARDS AND ACHIEVEMENTS

- **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