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Education

School of Engineering and Technology, Christ University   **Bangalore**
B.Tech in Computer Science and Engineering , CGPA - 3.93/4   *2014–2018*
Graduated first rank with a Gold Medal.

- Enjoyed taking courses such as Cryptography, Databases, System Software, Networks and Automata Theory
- Final-year project titled "Intrusion Detection and Prevention System for smart city middlewares" was done at the Indian Institute of Science[1]
- Received an "Outstanding Academic Achiever" award for academic accomplishments
- Recipient of Merit Scholarship for two consecutive years 2016-17
- Served on the University Student Council, representing the School of Engineering and Technology, for two consecutive years
- Represented Christ University in a national-level table-tennis championship
- Actively took part in various quiz competitions - both general and technical. Won many prizes at local and national level events.

St. Paul's English School   **Bangalore**
Indian School Certificate (ISC), 92.2%   *2012–2014*

- Received a "Consistent Performer" award for consistent academic achievements
- Won the first place in a state-level debate competition organised by the Rotary club of Bangalore. Argued against the practicality and effectiveness of the amended Right to Education Act, 2009.

Carmel School   **Bangalore**
Council for the Indian School Certificate Examinations (ICSE), 90%   *1999–2012*

- Received an award for scoring a perfect 100 in Computer Science

Work Experience

AI, Robotics and Technology Park (ARTPark)   **Bangalore**
Senior Software Engineer   *November 2020–Present*

- Currently involved in developing a privacy-preserving data platform for data exchange and analytics. This company is a joint venture by the Indian Institute of Science and Aifoundry. The project is funded by the Government of India and the Government of Karnataka[2]
- Co-authoring four Bureau of Indian Standards[3] documents on Information and Communications Technology in Smart Cities. Two of them are in wide circulation.[4]

Indian Institute of Science   **Bangalore**
Technical Associate   *June 2018–November 2020*

- Was a leading maintainer of an app[5] developed for BBMP (the Bangalore municipality) which helped in tracing high-risk COVID-19 suspects using Aarogya Setu[6] data. Worked under Dr Vivek Raghavan (chief of biometrics at Aadhar[7]) and Dr Lalitesh Katragadda (co-founder of Google India)

- Developed an anonymisation framework for Aarogya Setu data. It is capable of anonymising names, phone-numbers and adaptively gridding coordinates to protect privacy; used GoLang, Amazon S3, Redshift and Redash in the development of this tool.

- Was part of the core team which developed the technical specifications, architectural design and the reference implementation of "Indian Urban Data Exchange", a data exchange platform for smart cities. The Government of India funded this project. We used Vertx, Ansible, RabbitMQ, Python, PostgreSQL and MongoDB for the project.

- Was a leading developer in the team which architected, developed and deployed many flavours of an IoT middleware. A version of this middleware is deployed in Pune and Varanasi. We used tools and languages such as Java, Python, Golang, Lua, RabbitMQ, LDAP, Docker, Ansible, Elasticsearch, Kong and Tomcat.

Internships

Indian Institute of Science   **Bangalore**
Intern - Middleware Security   *November 2017–May 2018*

- Developed an "Intrusion Detection and Prevention System" for an IoT middleware platform. It was capable of preventing DoS attacks and some kinds of exploits. Built using Fail2ban, Python, Ansible, GoLang and Lua

Indian Institute of Science   **Bangalore**
Intern - Database Systems   *April 2017–May 2017*

- Thoroughly evaluated various NoSQL databases for the persistence layer of an IoT middleware.[8]

Lion's Club, Bangalore   **Bangalore**
Intern - Android Development (part time)   *July 2016–March 2017*

- Developed an Android app which helped people locate and contact eligible blood donors quickly.

Twango Social Network Pvt. Ltd.   **Bangalore**
Intern - Software Development   *April 2016–May 2016*

- The company offers matrimonial and dating services. Developed a windows application for the company to manage its massively growing user base. The software was also capable of making partner recommendations based on user preferences.
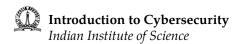
Notable Projects

- *Aarogya Setu Anonymisation*[9]: Developed an anonymisation framework to hide personally identifiable information from the Aarogya Setu self-assessment chat dataset. This framework, while preserving privacy, retained all the characteristics needed for predictive modelling of COVID-19 hotspots.

- *Indian Urban Data Exchange (IUDX)*[10]: Was involved in the core team of developing a common data exchange platform for smart cities in India. This project was funded by the Govt. of India. IUDX is deployed "in-production" in two Indian cities namely, Pune and Varanasi.[11]
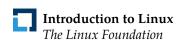
- **_Vermillion_**[12]: A scalable and highly-available IoT middleware for smart cities, built for speed and responsiveness. This middleware was the final and most mature implementation among the previous iterations of IoT middlewares that we had built. This is currently deployed as a part of the IUDX stack.

- **_Corinthian_**[13]: Built a faster and more robust version of IDEAM using Kore, a fast and secure web platform written in C. This project also comprised of microservices deployed using Docker.

- **_IoT Data Exchange and Analytics Middleware (IDEAM)_**[14]: This was an initial version of the smart city data exchange platform. This platform comprised various microservices which were developed using Undertow and deployed using Docker and Ansible.

- **_Intrusion Detection and Prevention System for Smart-city Middlewares_**[15]: It was a security layer built for smart-city middlewares to prevent attacks by malicious users. It was capable of protecting against DoS attacks and some kinds of exploits by observing patterns from log files and using blockchain techniques
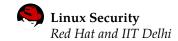
Skills

- Good knowledge of backend systems, databases and microservices.

- Skilled in various development, automation and deployment tools like Docker, Docker Swarm, Ansible, Travis and Jenkins.

- Good understanding of large scale deployment needs in terms of architectural and programmatic design. Extensively worked on building high-performance reactive microservices using Java.

- Strong knowledge of the git version control system

- Experienced in Java, Python, SQL and shell scripting. Worked on numerous projects using languages like C, C++, Embedded C, VB.NET, C#.NET, Lua, and Go.

Courses and Certifications

Introduction to Cybersecurity
Indian Institute of Science

Introduction to Linux
The Linux Foundation

Linux Security
Red Hat and IIT Delhi

Design of Self-Driving Car
JED-I, Bangalore

Autonomous Robots
Atom Robotics

Teaching Experience

- Taught a module "Database Systems and Scaling Strategies for IoT middlewares" as a part of "Foundation Courses on Micro, Nano and Smart Systems" at the Indian Institute of Science

- Held a three-day workshop on Android Application Development for high school students at a National Science Museum

Volunteering Experience

Vivekananda Balaka Sangha, Ramakrishna Math   **Bangalore**
Member   *December 2007–Present*
A Sunday School for Children

- Developed a Windows application to manage student applications and summer camp materials.
- Helped organise soft-skill training programs and yearly two-week long summer camps for all-round development of children. Also taught sessions on analytical thinking and Vedic-hymn chanting[16]

Achievements

- Invited for an online paid interview by researchers from the Software Analysis and Testing (SALT) lab of the Electrical and Computer Engineering Department, University of British Columbia, Vancouver to talk about bugs and failures in IoT systems.

- Won a paid trip to RabbitMQ Summit 2019 in London - sponsored by CloudAMQP[17] and the Indian Institute of Science. This was featured in the Cyber-Physical Systems website of IISc[18]

- Secured a national rank of 567 among tens of thousands of participants in a competitive coding contest conducted by Tata Consultancy Services (TCS)

Conference Presentations

[1] N. Karanjkar, P. C. Tejasvi, and B. Amrutur, "A SimPy-based Simulation Testbed for Smart-city IoT Applications," `https://dl.acm.org/doi/abs/10.1145/3302505.3312591`, ACM/IEEE Conference on Internet of Things Design and Implementation, Montreal, Canada, 2019.

Manuscripts in Progress

[2] P. C. Tejasvi, V. Rajaraman, A. B. Puthuparambil, A. Pankaj, and B. Amrutur, "Vermillion: A High-Performance Scalable IoT Middleware for Smart Cities," *arXiv preprint arXiv:2003.08361*, 2020, `https://arxiv.org/abs/2003.08361`.

Links

[1] `https://iisc.ac.in`

[2] `https://artpark.in`

[3] `https://bis.gov.in/`

[4] `https://www.services.bis.gov.in:8071/php/BIS_2.0/dgdashboard/draft/darftdetailcomm/384/3/LITD-28`

[5] `https://bangaloremirror.indiatimes.com/bangalore/others/six-global-firms-iisc-have-bbmps-back-in-covid-battle/articleshow/75856523.cms`

[6] `https://aarogyasetu.gov.in/`

[7] `https://www.uidai.gov.in/`

[8] `https://docs.google.com/document/d/1Eo5yPI9dYoPYQl5KmdR4W8Vcfevu4_QLt6eJI7rXSaQ/edit?usp=sharing`

[9] `https://github.com/pct960/anonymiser`

[10] `https://github.com/iudx`

[11] `https://smartcity.eletsonline.com/pune-becomes-first-smart-city-to-use-iudx-to-launch-its-pilot-urban-data-exchange/`

[12] `https://github.com/rbccps-iisc/vermillion/releases/tag/v0.2.0`

[13] `https://github.com/rbccps-iisc/corinthian`

[14] `https://github.com/rbccps-iisc/ideam`

[15] `https://github.com/rbccps-iisc/ideam/tree/bcc4bcd5447cf7923773f71a732dfdf0d75d53d4`

[16] `https://www.britannica.com/art/Vedic-chant`

[17] `https://www.cloudamqp.com/`

[18] `https://cps.iisc.ac.in/rabbitmq/`