

# Dhruv Rauthan

+91 9718 301 601 | f20190095@goa.bits-pilani.ac.in | dhruvrauthan.github.io ↗

## Research Interests

---

Software Defined Networking, Network Security

## Education

---

**Birla Institute of Technology and Science, Pilani**

Bachelor of Engineering in Computer Science

Aug. 2019 – June 2023

8.63 CGPA

**Army Public School, Dhaula Kuan**

Science with Maths and Computer Science

May 2017 – May 2019

95.4%

## Research Experience

---

**Covert Channels in SD-WANs (Thesis)** | Prof. S. Schmid ↗

Aug. 2022 – Present

- Worked as a research intern at Technische Universität Berlin
- Set up an open-source SD-WAN and exploited timing differences in tunnel reconfigurations to exchange covert information between hosts in separate LANs

**SiegeBreaker2** | Prof. S. Chakravarty ↗, Prof. V. Naik ↗

Feb. 2022 – Present

- Designed improvements over an existing SDN decoy routing system which included setting up a SmartNIC on a CDN edge server, utilising the new Encrypted ClientHello and using Docker instances to relay requests between the user and a blocked website
- Developed a custom proxy using OpenVPN with stunnel to encrypt and encapsulate TCP segments

**Sugamyata** | Prof. S. Joshi ↗

Jan. 2022 – Present

- This project aims to contribute to the work of accessibility education in India
- Involved in preparation of academic and industry surveys to gauge the importance given by professionals to accessibility related topics
- Analyzed data taken from a software engineering course to understand the impact of accessibility education on students

**Evaluation of Cloud Storage on Edge** | Prof. A. Trivedi ↗, Prof. V. Naik ↗

Jan. 2022 – Nov. 2022

- Deployed a Cassandra node cluster in a collection of virtual machines using an open-source framework
- Analyzed the effect of changing latency between network links during read/write operations to the database while also varying Cassandra's replication factor and consistency level

**Offline Payment Protocol** | Prof. V. Naik ↗

Aug. 2021 – Jan. 2022

- Developed software which enables point-to-point monetary (CBDC) transactions with the use of authorised hardware (TEE) in mobile devices
- Implemented the Registration and Transaction protocols in the Offline Payment System "untrusted" framework through an Android application
- The purpose of the app was to provide an offline payment functionality which allowed users to make transactions even in the absence of the internet, by connecting to a local hotspot

**Privacy in SDN based Networks** | Prof. V. Naik ↗

Jan. 2021 – May 2021

- Understood the recent advancements in network security and analyzed the different approaches towards censorship circumventions
- Built software using Apache2 and OpenSSL to circumvent censorship agencies' firewalls by using ESNI and the concept of domain hiding
- Set up a proxy website on an Apache2 server used to relay requests between the user and a blacklisted domain

## Professional Experience

---

### Software Summer Intern

May 2022 – July 2022

NVIDIA 

Pune, India

- Part of the CUDA Profiling Tools Interface (CUPTI) software team
- Analyzed CUPTI performance, helped identify and improve areas of overhead for each activity separately by removing redundant code
- Configured scripts to initiate Docker containers for efficient CUPTI overhead testing

### Summer Intern

June 2021 – July 2021

Village Book Builders 

USA

- Customized open-source and proprietary software including a Google Meet bot to record meetings automatically
- Discovered ways to remotely manage hundreds of computers using SSH and Powershell
- Leveraged 3rd party APIs such as Microsoft Azure for live speech translation to bridge language barriers

### Android Developer

Apr. 2020 – Aug. 2020

IndiaHaat 

Delhi, India

- Created the alpha build of the Android app for a startup which helps retailers get wider access to customers in their area
- Worked with Android development tools including Kotlin, Retrofit2, MVVM architecture, Google Maps APIs and databases using Room
- The app allowed customers to place orders from local convenience stores near them at lower prices

## Teaching Experience

---

### First Degree Course Mentor

Sep. 2022 – Present

CS F314 Software Development for Portable Devices

## Volunteer Experience

---

### Project Lamani | *Teacher*

Took part in an initiative of Abhigyaan, a volunteer organization, and taught under-privileged primary school children in slums

## Technical Skills

---

**Languages:** Java, C/C++, Python

**Networking:** Mininet, OpenFlow, OpenvSwitch, OpenSSL, Apache2 Server, OpenVPN, stunnel

**Developer Tools:** Git, Docker, Android Studio, VS Code, Apache Cassandra, GNS3

## Publications

---

P. Loganathan\*, **D. Rauthan\***, A. Trivedi, V. Naik. "Performance Measurement of Distributed Storage on Edge Devices". Accepted at Testbeds for Advanced Systems Implementation and Research (TASIR) Workshop held in conjunction with the 15th International Conference on Communication Systems & Networks (COMSNETS'23). January 3-8, 2023, Bengaluru, India. (\* Equal contribution)