

# Dhruv Rauthan

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## Research Interests

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Software Defined Networks, Network Security, Android Development

## Education

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**Birla Institute of Technology and Science, Pilani** Aug. 2019 – May 2023  
*Bachelor of Engineering in Computer Science* 8.63 CGPA

**Army Public School, Dhaula Kuan** May 2017 – May 2019  
*Science with Maths and CS* 95.4%

## Research Experience

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**Covert Channels in SD-WANs (Thesis)** | *Supervisor: Prof. Stefan Schmid* Aug. 2022 – Present

- Research Intern at Technische Universität Berlin
- Identifying covert channels in a Software Defined-Wide Area Network

**SiegeBreaker2** | *Mentor: Prof. Sambuddho Chakravarty, Prof. Vinayak Naik* Feb. 2022 – Present

- An improvement over the existing SiegeBreaker system which involves using decoy routing in SDNs to enable access to websites blocked by the user's firewall
- The upgrades include setting up a SmartNIC on the CDN edge server, utilising the new Encrypted ClientHello and using docker instances to relay requests between the user and the blocked website
- Used OpenVPN with stunnel to encrypt and encapsulate custom TLS packets

**Sugamyata** | *Mentor: Prof. Swaroop Joshi* Jan. 2022 – Present

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

**Evaluation of Cloud Storage on Edge** | *Mentor: Prof. Animesh Trivedi* Jan. 2022 – May 2022

- Deployed a Cassandra node cluster in a collection of virtual machines using the Continuum framework
- Analysed the effect of changing latency between network links during read/write operations to the database while also varying Cassandra consistency levels

**Offline Payment Protocol** | *Mentor: Prof. Vinayak Naik* Aug. 2021 – Jan. 2022

- Developed software which enables point-to-point monetary transactions with the use of authorised hardware 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** | *Mentor: Prof. Vinayak Naik* Jan. 2021 – May 2021

- Understanding the recent advancements in network security and analysing the different approaches towards censorship circumventions
- Over the course of this project we 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

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### Software Summer Intern

May 2022 – July 2022

*NVIDIA*

*Pune, India*

- Part of the CUDA Profiling Tools Interface (CUPTI) software team
- Analyzed CUPTI performance and 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*

- Customised open-source proprietary software including a Google Meet bot
- Discovered ways to remotely manage hundreds of computers using SSH and Powershell
- Leveraged 3rd party APIs such as Microsoft Azure for 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

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### First Degree Course Mentor

Sep. 2022 – Present

*CS F314 Software Development for Portable Devices*

## Volunteer Experience

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### Project Lamani | Teacher

Took part in the initiative of Project Lamani and taught under-privileged primary school children in slums near the college campus

## Technical Skills

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**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