Dhruv Rauthan

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Research Interests

Software Defined Networks, Network Security, Android Development

Education

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

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

- Working as a research intern at Technische Universität Berlin
- Currently focussed on identifying timing covert channels in a Software Defined-Wide Area Network

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

- Designed improvements over an existing SDN decoy routing system which included 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
- Developed a custom proxy using OpenVPN with stunnel to encrypt and encapsulate TCP segments

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.
- Analyzed 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 an open-source framework
- Analyzed 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

- 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 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*

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

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