DIVYE KALRA

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SKILLS

- **Programming Languages :** C, C++, Python, HTML, CSS, SQL, MATLAB, Java, Rust
- **Frameworks / Libraries :** p5.js, FastAPI, Django, Matplotlib, SpringBoot
- **Softwares / Tools :** Git, Jekyll, Solidworks and Onshape, LaTeX, Nmap, Wireshark, Tcpdump

WORK EXPERIENCE

Information Security | Implementing a Cryptographic Agents Scheme for CASE Jan 2024 - June 2024
IITB Trust Lab, Indian Institute of Technology Bombay Mumbai, India

- Undergraduate thesis supervised by *Dr. Manoj Prabhakaran*.
- Implemented a COA-secure cryptographic primitive in Rust known as *CASE (Completely Anonymous Signed Encryption).*
- Collaborated with peers on the development of the *ECAS (Existentially Consistent Anonymous Signatures).*
- Facilitated the onboarding and handover process for an intern responsible for the ECAS development.
- Developed bare-bones functions to support ECAS development, enabling future use by other developers.

Hardware Security | Provable hardware-embedded security and privacy July 2023 - Dec 2023
Cyber Security Hub, Macquarie University Sydney, Australia

- Undergraduate thesis supervised by *Dr. Dali Kaafar*.
- Designed and implemented a framework for deploying a network of Trusted Execution Environments (TEEs).
- Ensured secure aggregation and computation on data from multiple sources using C, C++, and Python.
- Employed bloom filters and advanced encoding techniques for secure data handling.

Multiple-Client-One-Server Application | *Operating Systems Course Project* May 2023
BITS Pilani, Hyderabad Campus Hyderabad, India

- Developed a client-server application from scratch for message passing and logging.
- Implemented stateless communication between applications running on a single system.

Full Stack Web Application | *CartIn Online Supermarket* Oct 2022 - Dec 2022
BITS Pilani, Hyderabad Campus Hyderabad, India

- Developed a digital marketplace facilitating seamless buying and selling for 4000+ college students.
- Implemented key features: Add to Cart, Payment, Search and CRUD functionalities with distinct authentication for users, vendors, and admins.
- Front-end: HTML, Tailwind CSS, VueJS; Back-end: Java SpringBoot, PostgreSQL, JDBC.

Socket Programming | *Multiple User Chatroom Application* June 2022
BITS Pilani, Hyderabad Campus Hyderabad, India

- Developed a multiple user chat room application enabling real-time client communication.
- Planned future enhancements, including end-to-end encryption for secure communication.
- Utilized Python3's socket and select libraries.

PUBLICATIONS AND PATENTS

1. [First Inventor] A Device and Method for a Lightweight Stream Cipher
Indian Patent Published in the *Official Journal of the Patent Office* | Issue Number 49/2023 | Application Number : 202311039798

2. [Co-author] Efficient and lightweight data encryption scheme for embedded systems using 3D-LFS chaotic map and NFSR
Published in *e-Prime - Advances in Electrical Engineering, Electronics and Energy* | *https://doi.org/10.1016/j.prime.2023.100273*
With Prof. Manish Kumar

3. [Co-Author] Machine Learning based prediction of Vanadium Redox Flow Battery temperature rise under different charge-discharge conditions
Under Review in *Energy Storage* | *https://arxiv.org/abs/2404.17284*
With Prof. Ankur Bhattacharjee

EDUCATION

Johns Hopkins University Baltimore, USA
Master of Science in Security Informatics Aug 2024 - Expected Dec 2025

- Coursework: Software Vulnerability Analysis, Security and Privacy in Computing, Cloud Computing Security, Cybersecurity Risk Management

BITS Pilani Hyderabad, India
B.E. Electrical & Electronics and M.Sc. Mathematics Aug 2019 - Jun 2024

- Relevant Courses: Data Structures and Algorithms, OOPS, OS, Discrete Mathematics, Graph Theory, Advanced Algebra, Probability and Statistics, Applied Stochastic Processes, Differential Equations (ODE & PDE)