

Lakshay Chauhan

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EDUCATION

Indraprastha Institute of Information Technology (IIIT) Delhi

Bachelor of Technology Honours in Computer Science and Engineering (CSE)

CGPA: 8.11

Dec 2021 – Present

WORK EXPERIENCE

Research Assistant | [Repository](#)

May 2024 – Present

Networks and Systems Security Lab - IIITD

Dehli, India

- **Objective:** Address quality degradation in video streaming applications when fallback from QUIC to TCP occurs due to UDP blocking.
- **Solution:** Implemented a mechanism to send notifications in QUIC packets to anticipate UDP blocking. Server logs the kernel congestion window state to be used in the upcoming TCP connection. Improved user experience by avoiding TCP slow start, thus preventing buffering during fallback.

Summer Undergraduate Research Fellowship Scholar | [Repository](#)

May 2023 – Aug 2023

Creative Interfaces Lab - IIITD

Delhi, India

- **Objective:** Develop a system to replicate user interactions (keyboard clicks, mouse movements, drawing, etc.) on an imaginary surface into a digital representation.
- **Solution:** Utilized Arduinos and ultrasonic sensors to capture user movements. Mapped sensor inputs to digital representations using Python. Implemented spline interpolation to create continuous motion paths, addressing discontinuities from fast movements.

PROJECTS

Minimal Compiler Infrastructure ‘irl’ | [Repository](#)

May 2024 – Present

- **Key Skills:** *Compiler Infrastructure and Optimization, Systems Programming, Rust, FASM, WASM, Graphviz*
- Developed a minimal compiler infrastructure inspired by LLVM. It converts source code into an optimized control flow graph (CFG) and translates it into target-specific assembly code.
- Implemented CFG optimization passes, such as identifier validation, constant folding, and CFG simplification, ensuring high-performance code generation.

Scalable Ride-Booking Platform ‘Zuber’ | [Repository](#)

Jan 2024 – Apr 2024

- **Key Skills:** *System Design, Scalable Architecture, Database Management Systems, Python, MySQL*
- Designed a scalable ride-booking platform with a robust backend architecture optimized for efficient data handling and concurrent transactions.
- Improved real-time data processing by implementing SQL triggers, OLAP queries, and advanced transaction management for concurrency.

Real Estate Aggregator Platform ‘25acres’ | [Repository](#)

Apr 2024 – May 2024

- **Key Skills:** *System Design, Rest API, Authentication, Cryptography, Security, Django, Python*
- Developed a comprehensive real estate aggregator platform designed to secure transactions and protect user data by implementing advanced security protocols like end-to-end encryption and Kerberos authentication.
- Integrated multiple security features, including SSL, HTTPS, PKI, OTP, SQLite, Nginx, and e-signatures, which collectively reduced fraud incidents by 85%

TECHNICAL SKILLS

Languages: C, C++, Rust, Assembly, Java, Kotlin, JavaScript, Python, Bash, Haskell

Frameworks: PyTorch, Django, ReactJS, Numpy, Pandas, Tauri, LibGDX

Developer Tools: Emacs, Linux, Git/Github, Markdown, Google Cloud Platform, OpenLiteSpeed

Technical Electives: Data Structures & Algorithms, Operating Systems, Database Management, Computer Security, Computer Networks, Compilers, Machine Learning, Natural Language Processing

AWARDS

Awarded **Summer Undergraduate Research Fellowship** in 2023 for the project “Utilizing ultrasonic distance sensors as a mapping tool to design user-friendly CST”.

Awarded **CHANAKYA Fellowship** by **iHub Anubhuti Foundation** in 2024 for the project “A Unified Approach to User Emotion Detection through Emojis and Textual Analysis”.