SHAILESH KUMAR SHARMA

+91 8887616978 • shailesh.sharma.23@kgpian.iitkgp.ac.in • LinkedIn • GitHub

SUMMARY

Shailesh Kumar Sharma is a Master's student in CSE at IIT Kharagpur, graduating in Dec 2025. He has industry experience in full-stack development, cloud systems, and network analytics. His current research focuses on decentralized systems, blockchain, and secure network protocols. Currently, he's working on decentralized ride-sharing and network fault tolerance.

PUBLICATIONS

DeRide : An Incentivized Peer-to-Peer Ride Sharing Service using Permissioned Blockchain Networks Under Review

- Designed and implemented DeRide, a decentralized peer-to-peer ride-sharing platform using Hyperledger Fabric, integrating blockchain-based smart contracts for secure, verifiable rider-driver assignments and token transactions.
- Developed a non-monetary token-based incentive mechanism to ensure fair user participation, where users earn tokens by driving and spend them for rides, creating a self-sustaining ecosystem without centralized intermediaries.
- Formulated and solved an NP-complete optimization problem for rider-to-driver matching, applying a heuristic-based greedy algorithm to maximize seat utilization under deviation and capacity constraints, with real-world validation via simulation on OpenStreetMap data.

DeRideFair : A Fair and Incentivized Peer-to-Peer Ride-Sharing Framework Using Permissioned Blockchain Working

- Developing a blockchain-enabled, decentralized ride-sharing framework incorporating fairness-aware assignment using multi-objective optimization (NSGA-II or Max-Min scalarization).
- Constructing a formal mathematical model with binary decision variables, deviation-constrained routing, and variance-based fairness metrics to improve equitable workload distribution among drivers.
- Incorporating real-world system assumptions (e.g., route feasibility, capacity homogeneity, no rider transfers) to ensure practical applicability and robustness of the proposed model.

Merkle-Based NECTAR : Efficient Byzantine-Resilient Network Partition Detection Working

- Currently researching and optimizing Byzantine-resilient network partition detection (based on NECTAR, ICDCS 2024), significantly reducing its time complexity from $O(N^4)$ to $O(N^2 \log N)$ through Merkle tree integration.
- My work involves designing efficient, fault-tolerant distributed protocols for network integrity and agreement, directly applicable to enhancing the robustness of complex distributed systems.
- We plan to submit our improved approach to ICDCS 2026

EXPERIENCE

ClearTrail Technologies : Software Engineer Feb 2023 - June 2023

- Worked on the development of a data processor for intercepted network data to identify AAA and IP addresses for fingerprinting and footprinting.
- Used Networking Tools, DevOps Tools, C/C++, Python, Java for custom DPI, Golang, and Kafka.
- Monitoring network traffic using DPI technology to identify and analyze data packets for security threats, performance issues, and compliance with network policies.
- Implement DPI to detect and mitigate security threats, such as malware, intrusions, and data leakage, by inspecting and filtering packets.

AppLogic Networks (formerly Sandvine) : Software Engineer II April 2022 - Dec 2022

- Sandvine is a network intelligence and application company that provides products and services to help customers manage their networks: App QoE and Network policy control.
- Worked on Sandvine's Packet-Logic Real-time Enforcement (PRE) deep packet inspection engine and its custom Linux distribution, Packet-Logic Distribution.
- Developed a tool/script to verify optimal configuration and tuning of the Policy Traffic Switch and Traffic Steering Engine in KVM hypervisor virtual machines.
- Conducted functional testing for the dynamic shaper feature to customize subscriber policies and created Python unit tests for complete feature coverage.

Innovaccer Analytics : Associate Software Engineer Sep 2021 - April 2022

- Developed and fixed bugs in the backend components of our software applications using Python, Node.js, and Java, ensuring optimal performance and scalability.
- Built and deployed Health Care solutions as APIs to various clients using AWS services.
- Developed, optimized, and maintained database structures, queries, and indexing for efficient data storage and retrieval.
- Worked on Django, Nodejs, Unit Testing, Rest API, Ansible, K8s and AWS.
- Collaborated with cross-functional teams in agile sprints to deliver features and resolve production issues with minimal downtime.

PROJECTS

QR Detection with Blockchain and Machine Learning *Course Project, Blockchain + ML* Jan 2024 – May 2024

Built a hybrid system combining React-based QR scanner, Flask ML API, and Ethereum smart contracts to verify QR code authenticity. The ML model classifies codes as "real" or "fake," while blockchain ensures tamper-proof hash verification. Designed and trained custom QR code datasets and deployed smart contracts using Hardhat. Emphasized decentralized, scalable security with a future-ready modular architecture.

PCAP File Analyzer & Folder Watcher *B.Tech Final Year Project, Networking* Aug 2020 – April 2021

Developed a C++ application to parse PCAP files and export structured network data to Excel. Implemented automated folder monitoring to trigger real-time packet analysis and reporting. Generated statistics on packet counts, protocol distribution, and traffic volume for deep network diagnostics.

Offline Encrypted Messaging via QR Codes *Course Project, Web Development* Aug 2020 – Nov 2020

Developed a fully offline messaging tool that enables secure communication using QR codes without relying on Wi-Fi, Bluetooth, or internet connectivity. Implemented RSA key pair generation for end-to-end encryption, allowing users to encrypt messages with recipients' public keys. Integrated QR code generation for encrypted messages and enabled decryption through device camera or image uploads using private keys. Ensured complete local execution with no data transmission to external servers, preserving user privacy and data security.

EDUCATION

Master of Science in Computer Science Dec 2025 (Expected)
Indian Institute of Technology, Kharagpur, WB, India CGPA: 8.0 / 10

Bachelor of Technology in Computer Science 2021
Uttarakhand Technical University, Dehradun, UK, India 73.80%

TECHNICAL SKILLS

Programming & Fundamentals: Java, C/C++, Python, Go, JavaScript, Algorithms, Data Structures, blockchain
Security & Cryptography: Merkle Trees, Digital Signatures, Cryptographic Primitives (basic), MPC
Backend Development: Spring Boot, Flask, Django, REST APIs, Microservices
Machine Learning (Foundational): Scikit-learn, Pandas, Data Preprocessing, Model Evaluation
Tools & Platforms: Git, Linux, Docker, IntelliJ, VS Code, Postman, JIRA, Swagger

RELEVANT COURSEWORK

Design and Analysis of Algorithms	Blockchain and its Application	Machine Learning
Distributed Systems	Computer Networks	Database Management Systems

ACHEIVEMENTS & CERTIFICATIONS

Certificates: Programming using Java by MTA Microsoft, DataBase certification BY ORACLE
Coding: 1700+ Points at CF, 1100 global rank in CodeJam