Ritesh Das

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INTRODUCTION

I am a blockchain developer with a strong focus on zero-knowledge proofs, cryptography, and smart contract development. With expertise in zk-SNARKs and privacy-preserving technologies, I specialize in creating secure, decentralized solutions that emphasize scalability and data privacy. My experience includes designing and implementing cryptographic circuits, integrating zero-knowledge proof systems, and developing decentralized applications (dApps) powered by advanced blockchain frameworks.

EDUCATION

Heritage Institute of Technology   Kolkata, India
Bachelor of Technology, Computer Science and Engineering   *Aug 2023 – July 2027*

South Point High School   Kolkata, India
PCM with Computer Science   *Apr 2021 – Mar 2023*

EXPERIENCE

Layer Edge Pte. Ltd.   December 2024 – March 2025
Software Development Intern   *SBF Center, Singapore*
- Implemented an intelligent sleep mechanism for the CLI Light Node, optimizing efficiency by detecting unchanged Merkle trees and intelligently skipping redundant ZK proof verifications, significantly reducing computational overhead in a probabilistic ZK verification model anchored to Bitcoin
- Developed a Merkle tree service using RISC Zero zkVM in Rust to handle Merkle tree operations via a server endpoint for Go-based integration

PROJECTS

Zero-Knowledge Election | [link](#) | *SnarkJS, Groth16, Next.js, Circom, Solidity*   December 2024
- Engineered a privacy-preserving election framework leveraging zk-SNARKs with the Groth16 proving system, ensuring voter confidentiality and secure election outcomes without revealing sensitive data
- Developed advanced zero-knowledge circuits in Circom, enabling efficient proof generation for anonymous voting while maintaining verifiability and scalability
- Integrated SnarkJS and Solidity to implement on-chain verification of zk-SNARK proofs through a custom verifier.sol contract, ensuring minimal gas costs and robust cryptographic security

Decentralized Twitter | [link](#) | *Nest.js, PostgreSQL, Solidity, Prisma, Hardhat, Pinata*   October 2024
- Spearheaded the development of a blockchain-powered social media platform inspired by Twitter, leveraging Ethereum smart contracts to ensure data integrity, transparency, and user control
- Designed and deployed smart contracts on Ethereum to enable secure, immutable user interactions, including posting, liking, and sharing, ensuring data tamper-resistance and self-ownership
- Implemented Pinata IPFS for efficient and secure storage of multimedia content, linking IPFS CIDs directly to blockchain transactions to maintain decentralized data flow

TECHNICAL SKILLS

Languages: Python, C/C++, JavaScript, TypeScript, Solidity, Circom, Rust, Go, HTML/CSS
Frameworks: Next.js, React-Native, Express.js, Astro, TailwindCSS, Hardhat, Foundry
Developer Tools: Git, VS Code, Visual Studio, PyCharm, IntelliJ, MetaMask, Pinata, Forge
Databases: MySQL, MongoDB, PostgreSQL
Libraries: React, Redux, Material-UI, ShadCN, Ethers.js, SnarkJS

ACHIEVEMENTS

- Secured 1st prize in the Bullieverse Track at Unfold 2024, Asia's largest multi-protocol, multi-chain Web3 hackathon hosted by CoinDCX
- Secured 3rd runner-up position in HackHeritage 2024, a 36-hour internal hackathon for Smart India Hackathon (SIH) 2024 held at the Heritage Institute of Technology campus