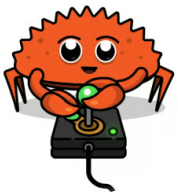

Vinay Sawant

Versatile Software Engineer
Current Position Core Distributed Protocol Engineer
Mumbai City, IN
vinay10949@gmail.com
Github: vinay10949@gmail.com
Expertise in Blockchain, Backend Development, Data Engineering,ML

About Me

I have spent the last 5 **years** dedicated to the Blockchain space, where I have been instrumental in building consensus for Layer 1 blockchain networks from the ground up (**Proof of DTS and Proof of Claim**) ,also spent on Writing Decentralized Network for elliptic curve multiplication. This specialized expertise has given me a unique perspective and a deep understanding of the intricacies involved.

With over 11 years of experience in the software industry, I am a highly accomplished professional specializing in designing and developing enterprise/cloud solutions. My expertise spans across E-Commerce, Fintech, and Healthcare industries, where I have consistently delivered sophisticated products driven by advanced analytics and machine learning. What sets me apart is my passion for cutting-edge technologies.

I am deeply engrossed in Blockchain, DeFi, Backend Development, Distributed Systems, Data Engineering, and ML. My strength lies in constructing high-QPS distributed systems, with a particular focus on data-intensive and low-latency applications. This skill set has allowed me to create robust solutions that meet the demanding requirements of various industries.

Currently exploring the Boundless Realm of Zero-Knowledge Proofs and Verifiable Computations.

Skills

Programming Languages:

- Rust
- Java
- Golang
- Python
- NodeJS
- Zig

Technologies:

- Distributed Systems
- Machine Learning
- Blockchain
- NoSQls
- Messaging Queues
- Cloud

Cloud Platform:

- GCP
- AWS

Blockchain:

- Layer 1's
- Bls Signatures
- DHT
- Threshold Signatures
- Substrate
- Layer 2
- Smart Contracts Development
- Consensus Algorithms (Proof of DTS and Proof of Claim)
- Zero-Knowledge Proofs

Work Experience

Lead Distributed Systems Engineer - Holonym (April 2024-April 2025)

Developed cryptographic protocols for a decentralized system enabling secure key generation and provable encryption using distributed key management.

- Human Keys Implementation: Engineered a system to derive cryptographic keys from human attributes while preserving privacy, enabling secure authentication and nullifier-based identities.
- Distributed Private Key Computation: Designed and implemented a protocol that allows elliptic curve point multiplication using a distributed private key, ensuring confidentiality and security.
- Provable Encryption & Smart Contract Integration: Developed mechanisms for users to prove encryption and enforce conditional decryption via smart contracts, unlocking applications in ZK identity and undercollateralized DeFi.
- Network Architecture & Optimization: Contributed to the design and optimization of the Network's distributed node infrastructure, ensuring efficient key management and request processing.
- Used FSPKE (Forward Secrecy Public Key Encryption) to encrypt key shares per epoch
- Used Shared Security using Eigen Layeer and Symbiotic and deployed it as AVS(Active Validated Service).

Technology: Rust, Cryptography, Zero-Knowledge Proofs, Distributed Systems, Smart Contracts

Core Distributed Systems Engineer-Versatus Labs (August 2022-April 2024)

- Experienced in L1 blockchain development, focusing on computationally lightweight block mining and consensus algorithms.
- Significant contributions to the implementation of DKG, Threshold signatures, Quorum Election, and Token Emission Methodology. -
- Designed and developed Left Right Concurrency over Mempool, enabling efficient broadcast over UDP through the use of RaptorQ in the networking stack. -
- Led the creation of a Decentralized Task Scheduler, optimizing network utilization with the FarmerHarvester Quorum.
- Currently engaged in research and exploration of innovative techniques to detect and address malicious network activity.
- Worked on metrics integration using Prometheus,also worked on storage layer for IPFS .
- Worked on building Lasr L2 Chain and a custom Verifier for AVS on EigenLayer.
- Worked on writing Staking Contracts for L2 Lasr.
- Some of my contributions: https://versatus.io/library/farmer-harvester-bft.pdf

Technology: **RUST**

Rust Engineer -SupraOracles (July 2021 -July 2022)

- Collaborated with world-renowned PhDs from some of the top universities to develop a Hybrid Consensus (Proof of DTS) for Layer 1 blockchain at a fast-growing startup.
- Designed and implemented modules for critical components, including nested DKG, Transaction Engine, Tribe Clan Model, Batch Proposer, Block Proposer, Threshold Signer, and BLS Sig Aggregator.
- Actively participated in building and refining the Hybrid Consensus algorithm for robustness and scalability. - Played a key role in optimizing the performance of the consensus mechanism for high throughput and low latency.
- Conducted thorough testing and debugging to ensure the reliability and security of implemented modules.
- Contributed to architectural discussions and provided technical insights to enhance the overall blockchain ecosystem.
- Actively participated in code reviews and mentored junior team members to maintain code quality and best practices.

Technology: **RUST**

SuperMoney (Technical Architect) June 2016 -June 2021

- Worked as Technical Architect for Fintech services development.
- Built a powerful backend infrastructure utilizing MicroServices with REST/gRPC APIs.
- Developed a Real-Time Notification Engine to send customer reminder notifications for repayments and eligibility for new loan products.
- Implemented a system with a calibrated ML model that reduced the likelihood of loan defaults by 40%.
- Created a Deep Learning model for document identification (e.g., PAN card, cheque) and performed OCR on PAN, Aadhar, Cheque, Insurance documents, etc.
- Constructed a text analytical engine that profiles expenses and cash inflow from SMS messages.

Software Engineer-BookMyShow (Aug 2014 - May 2016)

- Solved problem of Cold-Start Recommendation Engine for recommending music using Audio Data.
- Solved problem of Seat Occupancy by pinging 5k+ Cinemas for real-time seat allocation.
- Worked on solving large-scale data engineering problems by building large pipelines.
- Built backend microservices using gRPC/REST in Golang.
- Was also part of DevOps for deployment of Machine Learning Services.

BI Consultant Team Computers-Mercedes (Aug 2013 - Feb 2014)

- Worked as a trainee, gaining hands-on experience in Business Intelligence (BI) tools.
- Focused on QlikView and utilized it to build visually appealing and interactive dashboards for marketing analytics.
- Explored data insights, enabling the marketing team to make data-driven decisions and optimize their strategies.
- Gained proficiency in data visualization techniques, transforming complex data into intuitive and actionable visuals.
- Developed a solid foundation in BI concepts and tools, paving the way for future projects and career growth.

Blockchain (2021-2025)

Revolutionary Consensus: Unleashing a Novel Era for Blockchain Technology

Objective: Pioneering a Novel Consensus(Proof of DTS) Mechanism for Layer 1 Blockchain to Enhance Security, Speed, and Finality, Redefining the Future of Decentralized Systems.

- Collaborating with leading PhDs in Cryptography, actively involved in implementing a highly scalable and fast consensus engine.
- Contributed to cutting-edge developments such as Nested DKG, Tribe Clan Model for Consensus, and Bls Signatures.
- Took part in building L1 (Layer 1) from scratch, showcasing expertise in blockchain development and architecture.
- This experience highlights working on groundbreaking solutions and collaborating with top experts in the field, contributing to advancements in the consensus and blockchain domain.

Technology: Rust

NFT Market:

Objective: Design an application that covers the creation of an interactive NFT marketplace where users can buy, sell or bit NFT Collectibles.
Also, it has

- Next Js Integration with Web3 and Blockchain.
- Smart contracts are written in Solidity
- Link: NFT Market

Marketplace application:

Objective: Design an application that covers the creation of an interactive marketplace. Clients of this application will purchase courses(students can choose products of their choice) with Ether.
Page with real-time updates of Ether and course prices compared to the USD.
Also, it has

- Next Js Integration with Web3 and Blockchain.
- Creation of a more complicated Solidity Smart Contract.
- Email hashing and order verification feature.
- Testing solution for testing smart contract.
- Pagination and Filtering of orders

Link: Courses MarketPlace

Decentralized Exchange for ERC20 tokens (Dharma/ETH):

Objective: **Create a decentralized cryptocurrency exchange (dEx) powered by Ethereum smart contracts!**
Designed frontend in React-Js for exchange.
Wrote smart contracts for depositing/Withdrawing and placing orders for Dharma Tokens.
Added Tests for testing features of smart contracts

Link: Kartavya Decentralized Exchange

ML Projects (2014-2020)

Empowering Document OCR: Harnessing Python for Accurate Text Extraction

Objective: To fetch information from documents by OCR

- Successfully implemented OCR on various documents like PAN, Aadhar Front, and Aadhar Back, providing accurate user-level data, including photographs.
- Employed progressive calibration networks to achieve rotation invariance, enabling efficient extraction of photos from the documents.
- Designed and developed a robust API for generating QR codes for UPI payments, facilitating seamless and secure transactions.
- Created an advanced API capable of measuring similarity between two names, enhancing data processing and matching capabilities.
- Developed a reliable API that validates Aadhar numbers using the Verhoeff algorithm, ensuring data integrity and authenticity.

Deep Neural Networks for Accurate Document Detection

- Developed a robust CNN model using transfer learning with ResNet50 to accurately identify document types such as PAN, Aadhar Front, Aadhar Back, and Cheque.
- Extensively trained the model, fine-tuning it with additional layers to achieve high accuracy in document classification.
- Assumed full responsibility for model training, creation, and deployment, ensuring seamless integration into the company's document processing pipeline.
- Leveraged Python and the Connexion framework to create a powerful API, enabling efficient interaction with the document classification model.
- Implemented Docker for containerization, streamlining deployment and scaling processes, resulting in significant cost savings for the company.
- Notably, the successful implementation of the model and API resulted in reduced false OCR instances, contributing to substantial operational cost savings.

CardioDetect: An Innovative Approach to Cardiovascular Disease Detection

Objective: To design a system for detecting cardiovascular disease.

- Led end-to-end deployment, testing, monitoring, and retraining efforts for a document detection project, encompassing every stage from Exploratory Data Analysis (EDA) to Model Creation and Deployment.
- Assumed full responsibility for the detailed EDA phase, identifying key insights and patterns to inform the subsequent model creation process.
- Successfully developed and deployed the document detection model, rigorously testing its performance to ensure high accuracy and reliability.
- Implemented robust monitoring mechanisms to continuously track the model's performance and detect any deviations or anomalies.
- Achieved a remarkable Recall of 82% using F2 score as the evaluation metric, showcasing the model's effectiveness in correctly identifying relevant documents.
- The project's GitHub repository (https://github.com/vinay10949/CVD) serves as a testament to the dedication and excellence put into this endeavor, providing valuable insights for the broader community.

DeepGuard: Empowering SmartBackground Verification with Neural Networks

Objective: To use automate the problem of background verification.

- Developed an advanced eye detection system by extracting eye descriptors and calculating the Eye Aspect Ratio (EAR) for consecutive frames, enabling accurate detection of blinking patterns in individuals.
- Designed and implemented a Face-Verification module, revolutionizing profile photo authentication by comparing them with document photos, ensuring enhanced security and identity verification.
- Pioneered the creation of a powerful Name & Address similarity engine, utilizing cosine similarity and Levenshtein Distance to facilitate efficient data matching and verification.
- Assumed a central role in the end-to-end development process, from detailed Exploratory Data Analysis to model creation, deployment, testing, monitoring, and retraining.

Short-Term Loan Default Prediction for Enhanced Financial Stability

Objective: To develop a robust and predictive model capable of early identification and classification of loan defaulters, empowering financial institutions with actionable insights to mitigate risk, improve decision-making

- Led data engineering and data pipelining efforts, ensuring seamless data processing and analysis for our customer base.
- Conducted detailed analysis of customer data, extracting valuable insights to inform business strategies and decision-making processes.

- Successfully trained and tested a predictive model to identify first-time customers at risk of defaulting on a 5000 Rupee product loan.
- Achieved an exceptional F-Beta Score of 0.79, showcasing the model's high accuracy and reliability in predicting loan defaults.
- Spearheaded a groundbreaking initiative resulting in a significant 40% drop in loan default rates, enhancing financial stability and customer trust.

Music Recommendation Engine

Objective: **Pioneering User-Centric Music Experience: Develop a Cutting-Edge Solution to Address the Cold Start Challenge, Elevate User Engagement, and Acquire Actionable User Data on the Music Application.**

- Successfully tackled the Cold Start problem and improved user engagement on a music application.
- Utilized Music Information Retrieval (MIR) from the Vienna University library, incorporating features like rhythm patterns and temporal descriptors (approx. 2000 dimensions per song).
- Implemented Locality Sensitive Hashing and the Epsilon Greedy Approach for robust music recommendations.
- Technology stack: Python, Protobuf, Konga, Redis.
- Achieved real-time music recommendations for a user base of 50 million users, solving the Cold Start challenge effectively.

BackEnd Developer Projects (2014-2020)

Kartavya: Empowering Efficiency with the Delayed Queue

Objective: Enhance Operational Efficiency through Delayed and Real-time Notifications, Enabling Seamless Delivery of Close to 100 Million Notifications Per Day.

- Designed and developed the Delayed Queue Code Named "Kartavya," an intelligent queue system capable of enqueueing delayed actions and executing them at scheduled times.
- Implemented Delay push messaging for reliable and at-least-once delivery, along with a fail and retry mechanism, ensuring robustness and data integrity.
- Developed a set of 3 REST API calls to enable seamless message pushing, querying schedules, and deleting schedules from the queue, providing efficient user interaction.
- Leveraged cutting-edge technologies such as Redis, Golang, and AWS Cloud to build a cost-effective and highly efficient system, optimizing performance and scalability.
- The result was a successful implementation of the system, which streamlined processes, reduced costs, and significantly increased overall efficiency.

Streamlining Video Identity Verification for Karza and Signzy

- Developed a cutting-edge Microservice to encapsulate the business logic for Video KYC of Karza and Signzy.
- Leveraged Golang to create a robust and efficient solution, ensuring seamless execution of the Video KYC process.
- Successfully integrated the Microservice with the Karza and Signzy platforms, enhancing their capabilities for identity verification and compliance. T
- The Microservice enabled streamlined and secure Video KYC processes, providing a seamless user experience for customers.
- Played a pivotal role in ensuring data privacy, security, and compliance with regulatory requirements throughout the Video KYC workflow.
- This Microservice significantly contributed to improving the overall efficiency and accuracy of Video KYC operations for both Karza and Signzy, solidifying their positions as leaders in the industry.

Data Pipeline: Efficient Data Migration from AWS Athena to BigQuery

- Designed and constructed large-scale data pipelines for seamless data migration from AWS Athena to BigQuery, enabling efficient and effective analytics.
- Leveraged Python Celery for multiprocessing, optimizing data processing and significantly reducing processing time.
- Successfully orchestrated the entire data migration process, ensuring data integrity and accuracy throughout the transfer.
- Played a key role in enhancing the analytics capabilities of the organization by providing a reliable and scalable data pipeline solution.
- This project showcased expertise in handling big data, multiprocessing, and cloud services, contributing to improved data-driven decision-making and business insights.

Empowering SuperMoney: Creating and Managing Backend API (2016-2021)

- Developed and managed the entire backend for the SuperMoney product, utilizing Spring Hibernate for seamless API integration.
- Leveraged expertise in the Spring Framework, particularly Spring MVC, to design and implement robust and efficient REST APIs.
- Demonstrated strong proficiency in Spring IO and Spring Boot, ensuring smooth and reliable application performance.
- Successfully maintained and enhanced the backend system since 2016, providing ongoing support and continuous improvements.
- This experience showcases a comprehensive understanding of backend development and Spring technologies, enabling the successful delivery and maintenance of SuperMoney's backend API.

Eventify: Empowering Real-Time Notifications with the Event Notification Engine

Objective: Pioneering a Golang Web Service: Develop an Innovative Notification System Utilizing Google Cloud Pub/Sub for Real-Time Event Communication.

- Developed a high-performance GRPC-based web service in Golang, enabling seamless communication and data transfer between clients and the server.
- Created a robust processor that actively listens to subscribers and efficiently sends notifications to users, ensuring real-time updates and engagement.
- Assumed a key role in the end-to-end deployment of the system into Docker containers, optimizing scalability and resource utilization.
- Actively contributed to the High-Level System Design, shaping the architecture and ensuring a cohesive and efficient solution.
- Leveraged Golang's powerful capabilities to build a reliable and performant system, resulting in a seamless user experience and enhanced notification delivery.

GPS RT Service: Efficiently Processing and Analyzing GPS Coordinates in Real-Time

- Developed a high-performance logger service in Golang capable of handling millions of GPS coordinate writes every 10 seconds, extensively utilizing channels for efficient data processing.
- Implemented detailed summary statistics for GPS coordinates, calculating metrics such as daily distance traveled and identifying potential home locations for users.
- Assumed a key role in the end-to-end deployment of the system into Docker containers, ensuring seamless scalability and reliability.
- Actively contributed to the High-Level System Design, shaping the architecture to accommodate high throughput and real-time processing requirements. T
- This project for Supermoney showcased expertise in Golang, Docker, and data analytics, resulting in a powerful logger service that efficiently processed and analyzed vast amounts of GPS data, facilitating valuable insights and enhanced user experience.

SeatOccupancy Insights: Unleashing Real-Time Seat Data Retrieval from 5000+ Cinemas

Objective: Efficient Seat Allocation Data Retrieval: Develop a Scalable Solution to Pull Real-Time Seat Data from 5000+ Cinemas through Intelligent Pinging.

- Successfully achieved the objective of pulling data from 5000+ cinemas for seat allocation by developing a robust seat occupancy module.
- Implemented a smart scheduling mechanism to ping 2500 cinemas at specified intervals, capturing real-time seat occupancy data and storing it in a queuing system for further processing.
- Designed and integrated a SeatOccupancy engine to display real-time seat allocations in cinemas, providing users with up-to-date seat availability information.
- Effectively tackled race conditions during peak seasons when multiple users were concurrently booking seats, ensuring smooth and conflict-free seat reservations.
- Utilized a powerful technology stack comprising Node.js, RabbitMQ, MySQL, and Golang, enabling efficient high I/O operations and seamless storage of seat allocation data.
- This accomplishment showcases the ability to handle high-scale data processing and deliver real-time results, providing an enhanced user experience for cinema-goers.

Education

Masters in Computer Applications 2010-2013

Computer Science Major (Full Time)

Bachelors in Computer Science 2007-2010

Computer Science Major

Personal Details

DOB :25-08-1989
Birth Place :Mumbai.
Languages: English, Hindi and Marathi.
Marital status : Single