

SHATABARTO BHATTACHARYA

rik61072@gmail.com ♦ [hrik2001 | Github](#) ♦ [LinkedIn](#) ♦ [@riksucks | Twitter](#) ♦ [rikb.in](#)

EXPERIENCE

Financial Simulations Lead, LlamaRisk, CurveDAO

May 2023 - Present

- **Leading the quantitative risk efforts at LlamaRisk** and shipped an **agent based financial simulation framework** to come up with optimal ranges of parameters for pool to prevent bad debt and to maximize client's protocol revenue
- Helped to create **full-fledged agent-based simulations** that take into account **transaction slippage, market impact and behavior of liquidators** along with price volatility. These simulations are responsible for safeguarding assets worth \$2.01 million USD (as of 20-05-2024)
- Created an internal tool to **orchestrate ETL pipeline jobs** that fetch EVM events from various contracts for **risk and bad debt monitoring**. Used **Celery to schedule jobs and manage job queues** and **Postgresql for storage**. Exposed **graphql APIs** for risk monitoring dashboard
- Worked on **assessing the technological risks** for reports on **frxETH, cbETH, and rETH** at LlamaRisk, specifically for Prisma Finance.
- Conducted comprehensive analysis by reviewing **past audit reports**, investigating past transactions, and **performing code-based research**

Smart Contract Developer, Timeswap Labs

December 2022 - February 2024

- Led **testing and auditing** efforts of core smart contracts at Timeswap Labs, ensuring their functionality and security. Conducted **comprehensive testing** using **Forge's fuzz and invariant testing methodologies**, successfully uncovering various bugs and critical vulnerabilities within the smart contracts like identifying a **critical reentrancy flaw that allowed the liquidity token to be burnt twice**.
- Analyzed fees and past transactions using a Python script, providing data-driven insights on fee structure effectiveness.
- Developed **ETL pipelines, to index transactions from various blockchains almost real time**. Used **Celery for job queue and scheduling**.
- Designed and implemented a **high-performance API** serving **real-time prices of cryptocurrencies and derivatives** to **Timeswap web app**
- **Demonstrated mathematical expertise** by proposing and implementing an innovative fee collection model, **optimizing revenue generation**.

Maintainer, Human Protocol (formerly hCaptcha)

October 2022 - Present

- **Deployed the Reputation Oracle and Escrow Contract** on both the **mainnet and testnet of the Avalanche chain**, ensuring their successful implementation and functionality.
- **Assisted in deploying the subgraph for Human Protocol** for Avalanche chain, enhancing visibility and data accessibility.

Google Summer of Code Mentee, ListenBrainz, MetaBrainz

June 2022 - September 2022

- Worked as a **mentee at Google Summer of Code**, a **highly competitive program**, for the ListenBrainz project under MetaBrainz.
- Developed and took ownership of a feature that allowed users to share personalized music recommendations with their followers.
- **Created a scalable API that supports 7-8k API calls per month**, ensuring efficient and reliable performance for a large user base.
- **Built a frontend interface using TypeScript and React**, allowing users to seamlessly interact with the personalized music suggestion feature.
- Wrote end-to-end tests for the Python backend, utilizing Flask and pytest, and for frontend used Enzyme and Jest.

Open Source Contributions

- **OpenZeppelin**: Implemented and wrote tests for internal functions for use in upgradable smart contracts
- **Snekmate**: Created Fuzz tests for CreateAddress and Create2Address
- **docarray**: Created feature to support a variety of text formats and better support for multi-modal data.
- **ListenBrainz**: Wrote and saw through deployment of two features that I had taken ownership of - deleting and hiding events in feed.

Publications

- **Autoencoder-based dense denoiser and block-based wiener filter for noise reduction of optical coherence tomography**
Published in “**Computers and Electrical Engineering - Elsevier**” journal, which has an **impact factor of 4.152**, ranking it **15 out of 54** in Computer Science, Hardware & Architecture

Skills

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| • Blockchain: | Solidity, Hardhat, Ganache, Truffle, Ethers.js, Web3.js, Forge, Echidna, Slither |
| • WebDev: | Flask, Express, React, Next.js |
| • Databases/ORM: | Sqlalchemy, Mongoose, TypeORM, MongoDB, PostgreSQL, Sqlite3 |
| • Devops: | Github CI/CD, Docker, Docker Compose, Sentry |
| • Testing: | PyTest, Chai, Enzyme, Jest |

Education

- Bachelors of Engineering in Information Technology, Panjab University, Chandigarh
- Kendriya Vidyalaya, Noida (89% in Central Board Examination for 12th Grade)