

# SHATABARTO BHATTACHARYA

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## EXPERIENCE

### Tech Team Lead, LlamaRisk, CurveDAO

May 2023 - Present

- **Leading the quantitative risk team at LlamaRisk** and shipped an **agent based financial simulation framework** to come up with optimal ranges of parameters for pools to prevent bad debt and to maximize multiple clients' protocol revenue. It can simulate 100s of instances of EVM concurrently. Also came up with **statistical methodology** to evaluate **debt ceiling** by considering **price impact** across various liquidity venues.
- 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 11.6 million USD (as of 22-11-2024)
- 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**.
- 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: | Sqllalchemy, 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)