Eric Muthuri

COMPUTER SCIENCE · BLOCKCHAINS · DATA MANAGEMENT

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Summary

I am a computer scientist who's been in the blockchain industry since 2018 - studying, researching on and implementing algorithms for blockchains and distributed ledgers. My most recent engagement has been leading the conceptualization the tokenomics model of a metaverse-based project, writing it's white paper and developing the smart contracts.

Alongside being a programmer, I have also held a data scientist role, leading the development of digital data collection forms which have been used to conduct surveys across Africa for multiple organizations - gaining substantial experience in digital data collection and aggregation, data analytics, visualization, database engineering and web development.

Education

The University of Edinburgh   *Scotland, United Kingdom*
MSc. IN COMPUTER SCIENCE - MERIT   *2018 - 2020*

- **Modern Cryptography** – Private & Public Key Encryption, Message Authentication Codes, Hash Functions, Modes of Operations & Block Ciphers, Digital Signatures, Zero Knowledge Identification
- **Blockchains and Distributed Ledgers** - Data Provenance, Consensus, Merkle Trees, Smart Contracts, Fairness and Fair Exchange, Byzantine Fault Tolerance, CoinJoin & Mix-nets, Multiparty Computation
- **Analytical and scientific databases** - Relational Algebra, Relational Calculus, Entailment of Constraints, Deductive Databases, Query Processing and Transaction Management
- **Advanced Databases** - Buffer & Disk Space Management, Indexing, Sorting & Aggregation, Join Algorithms, Locking, Concurrency Control, Crash Recovery and Distributed Databases
- **Advanced Topics in Foundations of Databases** - Complexity Theory, Query Minimization, Consistent Query Answering, Foundations of XML, Graph Databases, Query Rewriting and Semantic Optimization of Conjunctive Queries
- **Data analytics** - Statistics, Data Understanding & Cleaning, Linear Regression, Classification, Features, Clustering, Correlation, Logistic Regression and Neural Networks

Moi University   *Eldoret, Kenya*
BSc. IN COMPUTER SCIENCE - *First Class honours*   *2012 - 2016*

- Software development, algorithms, data structures and complexity analysis
- Software engineering, Database systems
- Project on abstraction in distributed data collection

Africa Nazarene University   *Meru, Kenya*
CERTIFICATE IN WEB DESIGN AND DEVELOPMENT - *Distinction*   *2013*

- Requirements specification, wireframe design, server side development, database integration

Competencies

- **Programming** - Solidity (Hardhat, Foundry, Truffle) · Java · R · CSPro · ODK · Angular
- **Web Design and Development** - PHP · HTML · CSS · JavaScript
- **API Integration**
- **Cloud Computing** - Intermediate AWS
- **Virtualization and Containerization** - Docker
- **Databases** - SQL(PostgreSQL) · NoSQL · Ontology Based Data Access · Blockchains & Distributed Ledgers
- **Team manangement** - Task allocation and management using Trello, Jira & Confluence · project planning · Interdepartmental correspondence · General organization, planning and management tasks like daily standups

Experience

MetaDex   *Remote*
TOKENOMICS LEAD AND SMART CONTRACT DEVELOPER   *Jan 2022 - Present*

- Tokenomics: Led the tokenomics team to conceptualize an innovative tokenomics model based on novel concepts like the continuous token for a bonding curve algorithm to source for liquidity during the ICO
- White paper: Led writer of the project's white paper
- Designed the token flow diagrams
- Simulated price movement of the project by implementing an analogue of an Automated Market Maker (AMM)'s liquidity pool in MS Excel to guide the team. By updating any figure like a token's supply or amounts in swaps, the sheet dynamically updates all corresponding liquidity pool statistics like token prices
- Collaborated with an external team of smart contract developers to predict and implement a deterministic price movement of a continous token during the ICO
- Developed smart contracts like the ERC20 token, vesting contract, lottery contracts and their interactions
- Researched on and concluded on the best DAO voting strategy and system - combining token balances with the quadratic voting to mitigate against malicious actor influence.

Mainston   *Lisbon, Portugal*
SOFTWARE DEVELOPER   *July 2020 - Jan 2022*

- Smart contract development with Solidity
- Web app development for blockchains - App managing user's crypto assets

CapDev Consultants Ltd   *Nairobi, Kenya*
PART-TIME DATA SCIENTIST   *November 2020 - date*

- Design and development of digital data collection templates
- Data preparation, cleaning, analysis and report writing
- Data visualization dashboards

Intergovernmental Authority on Development   *Djibouti, Djibouti*
WEB DEVELOPMENT CONSULTANT   *October 2020*

- Requirements engineering, wire-frame design, user interface design, web development and content management

International Potato Center   *ILRI Campus, Nairobi*
DATA MANAGEMENT AND KNOWLEDGE MANAGEMENT ASSISTANT   *Oct '15 - Apr '16 & Jul '17 - Aug '18*

- Built, tested and deployed scalable and modular data collection, aggregation and dissemination templates using CSPro and XLS that were used on the field for research in West Africa
- Data aggregation -> developing a statistical dashboard on progress
- Web, module and wire-frame design
- Development, testing and deployment of modules on the website
- Prepared Computer Aided Personal Interviewing tools for household surveys for CSPro applications
- Assisted the data management specialist in documenting metadata for SASHA year 6 data sets

Projects

PROFESSIONAL

- Conceptualization, validation, implementation and audit of a crypto project based on the bonding curve algorithm.

SCHOLARLY

- Alternative approach to SQL query processing – M.Sc Advanced Topics in Foundations of Databases Project, May 2019
- Developed a prototype demonstrating local data modification while effecting its abstraction from other applications – B.Sc Project, 2016