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Summary

As a software developer I love to tackle problems, debug issues and overall get things working perfectly. In my experience this is not always easy but it is extremely rewarding. I love to learn, challenge myself and reach new heights and goals, I feel that constant learning, reflection and self-improvement are key skills of mine.

My passion is for distributed and decentralised systems; blockchain technology; cryptography and trees/tries. With these I have experience in building them all from the ground up or using them in both personal projects and in production environments.

I am familiar with a number of testing and debugging environments and tools and always aim to ensure my code functions deterministically without any side effects.

Experience

PROTOCOL DEVELOPER - GROVE – 05/2023-03/2024

Working at Grove building out the Pocket Network Protocol, I gained experience in building both a new L1 chain from the ground up as well as pivoting to building a Cosmos-SDK chain, with Rollkit and Celestia.

When building the native L1 I lead the design of the CLI and RPC interface for the blockchain as well as the Key-base for users to create accounts and use the network. I also continued my work on a native Golang implementation of IBC for non Cosmos-SDK chains.

After the pivot to using Cosmos-SDK, my work primarily focussed on leading the design, architecture and implementation of the Gateway actor. This included the usage of Ring Signatures and I contributed back to this open source library numerous times. I was also heavily involved in the development of an in-house reactive programming framework of Observables and Channels for off-chain actors to subscribe and listen to on-chain events.

Alongside all this I worked on the Sparse Merkle Trie (SMT) which was used at the core of the protocol's business logic. I Implemented new features such as the Sparse Merkle Sum Trie to keep track of key-value-weight tuples as well as novel proving mechanisms such as the ProveClosest method which would provide a deterministic proof of inclusion for a leaf node with the most common leading bits as the path provided - which is what is used in the protocol's core business logic and was audited and found to be secure and efficient.

KEYWORDS

- Leading Projects, Features and Design Decisions; Trees/Tries; Cryptography; Cosmos-SDK; IBC; Code Review; Testing and Debugging, Golang

PROTOCOL DEVELOPER - POCKET NETWORK FOUNDATION – 12/2022-04/2023

My time working as a freelancer for PNF included the contribution to the Pocket Network V1 protocol before the pivot to Poktroll (aka Shannon). This was primarily through a series of bounties and tasks outsourced to the community and covered all aspects of protocol development including: design, documentation, database integration with Postgres, Sparse Merkle Trie (SMT) support among many other jobs such as leading projects and code reviews as well as beginning a native go implementation of IBC.

KEYWORDS

- Design, Documentation, Databases, Trees, Code Reviews, Leading Projects, Golang, IBC

Education

Durham University – Certificate of Higher Education in Computer Science, 2023

Skills

In all my roles I have achieved a great number of skills and will continue to build on them, some of those being: communication and time management; working fast in small teams and startups; programming in Golang, Python and Rust; Cryptography; Implementing existing and novel Data Structures and Algorithms; Debugging; Code Review; Testing; Optimisations as well as Research and Leading the Design of new Features.

References

Any references can be provided upon request from my previous roles.