

Freddy Li

SENIOR BLOCKCHAIN ENGINEER AT CHAINSAFE SYSTEMS(TORONTO, ON CANADA) · M.ENG(SE) FROM UNIVERSITY OF WATERLOO

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Skills

- Golang, Rust, Solidity, Ethereum, Polkadot, Substrate, Web3, Consensus Algorithms, Distributed systems, Cross-chain messaging and bridging, Redis, PostgreDB, MongoDB, LevelDB, Docker, AWS, Linux, Git

Working Experience

ChainSafe Systems - Gossamer(Polkadot)

Global

SENIOR BLOCKCHAIN ENGINEER - PROTOCOL

Feb. 2025 - Now

- Gossamer is a Go implementation of Polkadot node.
- It implements Polkadot Host functions such as consensus, networking, state machine, etc.
- Responsible for development of subsystems for the parachain block candidate lifecycle such as Bitfield Signing subsystem, Bitfield Distribution subsystem, etc. which aligning and compatible with Polkadot SDK implementation.

ChainSafe Systems - Sygma(Previously ChainBridge)

Global

SENIOR BLOCKCHAIN ENGINEER - WEB3 BRIDGING

Feb. 2022 - Mar. 2025

- Sygma is a Crosschain bridging protocol connecting between EVM and Polkadot.
- Lead the development and maintaining the Sygma Crosschain Bridge on Polkadot side including Substrate pallets, parachain runtime development, integration process between sygma relayer and substrate chains(e.g: Phala), production release, mainnet and testnet release.
- Responsible for design and develop the integration between Golang module and Substarte Rust module, AKA Polkadot Parachain runtime integration.
- Responsible for Sygma Mainnet Polkadot execution and configuration.
- Onboarding other Polkadot-Substrate chains onto Sygma bridge.

ChainSafe Systems - Ethermint and Cosmos Module for Chainlink(Cosmos)

Global

BLOCKCHAIN DEVELOPER - PROTOCOL

Jan. 2021 - Aug. 2021

- Tech: Go, NodeJS, Cosmos, IBC, Ethermint, Tendermint.
- Revamp the consensus layer to be compatible with Tendermint core.
- Revamp the application layer to be compatible with EVM.
- Revamp Ethermint RPC layer.

BitSpawn

Toronto, ON, Canada

BLOCKCHAIN PAYMENT SYSTEM DEVELOPER

Jul. 2019 - Dec. 2021

- Tech: Go, NodeJS, BitCoin, Solana, Ethereum, Solidity, Etherscan-api, BlockCypher-api, ERC-20 Standard, PostgreSQL, Redis, Bloom Filter, HD wallet, KMS, BitGo, Paypal, Stripe
- Designed and implemented Deposit Manager(Detail is in Project section).

OneLedger

Toronto, ON, Canada

BLOCKCHAIN PROTOCOL DEVELOPER

Apr. 2019 - Jan. 2021

- Tech: Go, Typescript, NodeJS, Tendermint, PBFT, LevelDB, HD key Derivation, PostgreSQL, SQS, Linux
- Developed Blockchain Transaction Verification layer.
- Developed Blockchain Transaction Check and Distribution layer.
- Developed Blockchain Fullnode and Validator node block scope layer.
- Developed Blockchain Distributed Database layer.
- Designed and developed Oneledger HD Wallet that supports BTC, ETH and OLT(Oneledger) key derivation.
- Designed and developed Oneledger Blockchain SDK.
- Designed and developed Oneledger Blockchain Explorer.

SkyQuark

Toronto, ON, Canada

BLOCKCHAIN APPLICATION DEVELOPER

Apr. 2018 - Apr. 2019

BlackBerry

SECURITY PLATFORM AUTOMATION DEVELOPER INTERN

Waterloo, ON, Canada

May. 2017 - Sept. 2017

Oracle

BACK-END DEVELOPER INTERN

Tianjin, China

Sept. 2014 - Feb. 2015

Projects(Github)

ChainSafe Systems - Gossamer

TECH: Go, RUST, POLKADOT, SUBSTRATE, DISTRIBUTED SYSTEMS STATE MACHINE

Feb. 2025 - Now

- Developed the parachain block candidates verifying subsystems.
- Improving the multiple subsystem communication channels by adopting the util modules such as gossip support.
- Splitting the block candidate processing logic from the distribution logic by adding the distribution subsystems.

ChainSafe Systems - Sygma(ChainBridge)

TECH: RUST, Go, POLKADOT, SUBSTRATE, ETHEREUM, SOLIDITY, CRYPTOGRAPHY, LEVELDB,

Feb. 2022 - Mar. 2025

ORACLE, DOCKER

- ChainSafe Sygma is a decentralized cross-chain messaging protocol. It supports ERC20, ERC721 and generic message passing between any EVM based chain; and reserved, non-reserved token transferring between EVM and polkadot.
- Participated as researcher & dev in this project.
- Designed and developed the Sygma Substrate pallets along with mainnet, testnet, local testnet runtime.
- Designed and developed the independent pallets with XCM to support Sygma on any substrate based chain(parachain and parathread).
- Integrated with Phala mainnet on Polkadot, testnet on Kusama.
- Integrating with Asset hub and bridge hub parachain(WIP)
- Designed the feature upgrade process for local testnet, public testnet, mainnet with docker images.
- Cross organization collaboration with Phala team in a different time zone.

ChainSafe Systems - Cosmos Chainlink Module

TECH: Go, COSMOS-SDK, CHAINLINK

Aug. 2021 - Nov. 2022

- Cosmos Chainlink module is one of the Cosmos SDK modules that designed and developed by ChainSafe Systems.
- Participated as TL & dev in this project.
- This module follows Cosmos Module development standard.
- It links Cosmos and Chainlink ecosystems so that community developers are able to submit/retrieve the feed data from Chainlink in the Cosmos ecosystem.
- Hierarchical management design makes sure the validity of the oracle data. Each data feed maintains its own owner list and data provider list.
- Token rewarded to the valid data provider each round.
- Business agnostic design makes the module generic in any kind data.

ChainSafe Systems - Ethermint

TECH: Go, ETHEREUM, COSMOS, TENDERMINIT, EVM

Jan. 2021 - Aug. 2021

- Ethermint is a blockchain protocol developed in Go that enables Solidity on Cosmos which combines the smart contract ability of Ethereum with the fast finality and cheaper gas of Cosmos.
- Developed the gRPC and JSON-RPC layer for Ethermint. It is compatible with Web3js so that any dApps using web3js can be connected to Ethermint seamlessly.

BitSpawn - Deposit Manager

TECH: Go, NODEJS, REDIS, POSTGRESQL, BLOOM FILTER, HD WALLET, FSM, ETHEREUM,

BITCOIN, SOLANA

Jul. 2019 - Dec. 2021

- Designed and implemented Deposit Manager(Golang+NodeJS) centralized server which is the Bitspawn Payment Gateway that
 - 1.) accepts deposit by multiple currencies(ETH/BTC/ERC20 tokens/SPL tokens/USD) and mint SPWN token on internal POA network;
 - 2.) allow withdraw from SPWN token to multiple currencies(ETH/BTC/ERC20 tokens/SPL tokens/USD);
 - 3.) Providing real time currency exchange rate query, internal token conversion .etc APIs for other backend services.
- Cobra CLI: support side features other then deposit/withdraw: token migration; KMS encryption/decryption; admin mint/burn/transfer; smart contract deployment; HD wallet management and Production tx scanning and reporting.
- Support multiple platforms withdraw for one currency.
- Down time catching up for all missed blocks/transactions.
- Highly configurable: easily switch ON/OFF for deposit/withdraw currency availability, and support auto or manual process.
- Finite State Machine design allows future scalability.
- Admin customizable Solidity smart contracts ensure the atomicity of both deposit and withdraw transactions.
- This whole project was implemented by myself, currently has approximately 170,000 active users(By Jan 2022).

OneLedger - Blockchain Protocol

TECH: Go, TENDERMINIT, PBFT, COSMOS-SDK

Oct. 2019 - Dec. 2021

- OneLedger blockchain is one of the public Blockchain networks which aims to build enterprise level Interoperability and open source for community to build dApps. (<https://github.com/Onelledger/protocol>).
- Using Tendermint as core consensus engine, OneLedger chain has application(node) layer, RPC layer, transaction verification /distribution layer and chain state distributed database(LevelDB) layer on fullnode and validator node.
- RPC layer: designed and implemented RPC endpoints for transaction and query.
- Transaction layer: designed and implemented transaction verification(signature mapping) for all transaction types, transaction fee charge logic, fee collection and reward withdrawal for validators.
- Distributed Database layer: designed and implemented database schema and store structure for different transaction types and block info.
- Block scope: designed and implemented block beginner and block end for internal transaction logic.
- Transactions: OneLedger Domain Service, Governance, Staking&Delegation, Block Rewards, Multi-currency Transfer, ETH/OLT Interoperability.

OneLedger - Hierarchical Deterministic(HD) Wallet

TECH: BITCOIN, ETHEREUM, TYPESCRIPT, BIP-32, BIP-39, ED25519, SECP256K1, RIPEMD160,

SHA256

Jun. 2019 - Apr. 2020

- OneLedger HD Wallet is a JavaScript module that provides ability to generate keypairs and sign Raw Transactions for multiple chains.
- Support configurable entropy to derive master seed.
- Support whole wallet backup and recovery from any device by mnemonic.
- Support BTC, ETH and OLT(OneLedger) keys derivation, address verification and transaction signing.
- Hide derived master seed and all private key to maximum security.
- Using hardened extended key path from BIP-39.
- Easily extendable to support other blockchain key algorithm.

Education

University of Waterloo

Waterloo, ON, Canada

MASTER OF ENGINEERING (SOFTWARE ENGINEERING)

Sept. 2015 - Dec. 2017

Tianjin University of Technology

Tianjin, China

BACHELOR OF SOFTWARE ENGINEERING

Sept. 2011 - Jun. 2015