Freddy Li

Dev Team Lead at ChainSafe Systems(Toronto, ON Canada) · M.Eng(SE) Graduate from University of Waterloo

☐ (+1) 226-750-0779 | ✉ tobeacookie@gmail.com | ⬡ freddyli7 | ⬛ freddy-li-771264b7/

"Love technology ; Self-motivated learning ; Love music, love sports and love compiled binary"

Skills

- Golang, NodeJS, Solidity, Ethereum, Truffle, Geth, Web3, Cosmos-SDK, Tendermint, Consensus Algorithms, Redis, PostgreDB, MySQL, MongoDB, LevelDB, SQS, KMS, Linux, Git

Education

University of Waterloo
Waterloo, ON

Master of Engineering (Software Engineering)
Sept. 2015 - Dec. 2017

Tianjin University of Technology
Tianjin, China

Bachelor of Software Engineering
Sept. 2011 - Jun. 2015

Working Experience

ChainSafe Systems
Toronto, ON

Team Lead
Aug. 2021 - Now

- Lead the development work on Cosmos-Chainlink module(Detail is in Project section).
- Lead the development work on GTS(Gasless Transaction as Service)(Detail is in Project section).

ChainSafe Systems
Toronto, ON

Blockchain Developer
Jan. 2021 - Aug. 2021

- Technologies: Go, NodeJS, Cosmos, Cosmos-Chainlink Moudle, Ethermint, GTS
- Developed Ethermint RPC layer(Detail is in Project section).
- Designed and developed Cosmos-Chainlink module(Detail is in Project section).
- Designed and developed GTS(Gasless Transaction as Service)(Detail is in Project section).

BitSpawn
Toronto, ON

Blockchain Payment System Developer
Jul. 2019 - Dec. 2021

- Technologies: 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

Blockchain Protocol Developer
Apr. 2019 - Jan. 2021

- Technologies: Go, Typescript, NodeJS, Tendermint, PBFT, LevelDB, HD key derivation, PostgreSQL, SQS, Linux
- Developed Blockchain RPC endpoint layer.
- 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

Blockchain Application Developer   *Apr. 2018 - Apr. 2019*

- Technologies: Ethereum, geth, parity, Solidity, Truffle, Mist, web3, IPFS, EOS, Docker, koa framework
- Designed and developed Skyquark Crowdsourcing system back-end using NodeJS, MongoDB, LevelDB, web3JS, Parity
- Designed and developed Skyquark Aristotle Chain using Parity.
- Designed and developing the Aristotle token system within Edusphere eco-system.
- Developed Edusphere Intellectual Property protection dApp(smart contracts) on Aristotle Chain.
- Developed Edusphere certificate verification dApp(smart contracts) on Aristotle Chain.
- Designed and developed Skyquark ICO smart contract(ERC-20)
- Provided 'Blockchain for Junior' online lectures as instructor at www.edusphere.io
- Developed an EOS based PoC of Aristotle Chain prototype.

BlackBerry

Waterloo, ON

Security platform Automation Developer Intern   *May. 2017 - Sept. 2017*

- Technologies: Android, Jenkins, Shell Script, UiAutomatorViewer, JUnit4, Linux, Git, JIRA, SSH, Security key exchange
- Developed security key based unit test cases including S/MIME, PGP and large size Sign and Encrypt key.
- Developed test sanity to automatically build testing job for different BlackBerry app components.
- Set up and configure Jenkins server and nodes to organize BlackBerry security message jobs.
- Designed and developed Monkey command tool App for automation and pressure test on BlackBerry apps.

Oracle

Tianjin, China

Back-end Developer Intern   *Sept. 2014 - Feb. 2015*

- Technologies: JavaEE, AJAX, jQuery, DBCP, MySQL, Tomcat, Apache Component lib, MVC, Linux, SSH, Git
- Developed a social network system based on JavaEE(SSH framework) and MySQL.
- Designed the database and implemented with PowerDesigner.
- Designed the architecture and using MVC for implementation.
- Awarded Best Intern Project by Oracle.

Projects(Github)

ChainSafe Systems - Gasless Transaction as Service

Technologies: Go, Ethereum, Solidity, Open Zeppelin Relayer   *Sep. 2021 - Now*

- GTS is a centralized server, which is able to pay gas fee on behalf of the signer of a transaction on EVM based chain.
- Worked as TL & dev in this project.
- Currently support 3 types of transactions: Sending Ether, ERC-20, ERC-721 token transfer, arbitrary contract call.
- Powered by Open Zeppelin Relayer on the backend.

ChainSafe Systems - Cosmos Chainlink Module

Technologies: Go, Cosmos-SDK, Chainlink   *Mar. 2021 - Sep. 2021*

- Cosmos Chainlink module is one of the Cosmos SDK modules that designed and developed by ChainSafe Systems.
- Worked 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

Technologies: Go, Ethereum, Cosmos   *Jan. 2021 - Mar. 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

TECHNOLOGIES: 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 scaliability.
- Admin customizable Solidity smart contracts ensure the atomicity of both deposit and withdraw transactions.
- This whole project was implemented by myself.

OneLedger - Blockchain Protocol

TECHNOLOGIES: Go, Tendermint   *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/Oneledger/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

TECHNOLOGIES: 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.

OneLedger - SDK

TECHNOLOGIES: Typescript, NodeJS, RPC   *Apr. 2019 - Jan. 2021*

- OneLedger SDK is a whole middle layer of JavaScript modules between community developers and OneLedger blockchain protocol which allows developers to query block or transaction info and securely serialise transactions offline and broadcast them.
- Highly configurable offline transaction serialization and signing workflow which allows community to extend their own transaction types, even using different network.
- Support different types of transaction broadcasting such as Async, Sync.
- Support both regular transaction and BTC/ETH Interoperability transaction.
- Multiple sub-modules design that separates transaction preparation, signing and broadcast into different modules for scalability.
- Easily configurable error handler for community to add and handle new errors.
- Configurable storage usage for different platforms(Web/Chrome Extension/Electron/Native).
- Support Ledger Device(Cold Wallet) with different connection type such as Bluetooth, USB etc.

OneLedger - Blockchain Explorer

TECHNOLOGIES: Go, WebSocket, Tendermint, Tendermint Events, PostgreSQL, SQS, CronJob   *Jun. 2019 - Jan. 2021*

- OneLedger blockchain Explorer is a set of services that watch, synchronize new block from OneLedger blockchain; persist block/transaction data into postgreSQL database; provide restful APIs for querying; send configruable notification for blockchain data alert.(`https://oneledger.network`)
- Self-catch-up plus SQS design guarantees the data integrity if Explorer or blockchain node is down or restarted.
- Micro-services design that data source is writing to SQS, and data handler is reading from SQS.
- Internal cronjob(goroutines) module maintains the public metrics data.
- Configurable notification module sends alerts to multiple receivers.
- Easily extendable transaction type design and DB design for new transaction types.
- Provide web socket for real-time blockchain info.
- Provide APIs for community developers to query blocks and transactions info.

SkyQuark - Aristotle Chain

TECHNOLOGIES: Truffle, Parity, AWS   *May. 2018 - Apr. 2019*

- Aristotle Chain using parity with PoA consensus algorithm generates an EVM based public chain for the foundation of SkyQuark Eco-system.
- Users need to sign up Edusphere system to get a wallet address connecting to Aristotle Chain.
- ETH Pre-fund accounts are transaction validators who are responsible for mining new blocks, validating all transactions.
- Users could be part of validators and sync full Aristotle Chain blocks to earn more tokens.

SkyQuark - Crowdsourcing System

TECHNOLOGIES: Nodejs, KoA, MongoDB, LevelDB, web3.js, truffle, AWS, Postman   *Sept. 2018 - Apr. 2019*

- Crowdsourcing system is the extension of Nodejs back-end web server between Edusphere system and Aristotle Chain.
- It's also the Aristotle chain user address, chain nodes and smart contracts management center.
- It connects with MongoDB as main business logic database and LevelDB as users reputation and other behaviors databases.
- It communicates with Aristotle Chain through Web3.js API.
- It provides APIs to the front-end edusphere system.
- It provides users a revenue auto-distribution system based on the Aristotle Token mechanism without signing any paper or electrical revenue sharing contracts
- Users behaviors on edusphere.io will be used to calculate the reputation and token rewards and the smart contracts deployed on Aristotle Chain will be triggered to make reward transactions

SkyQuark - Intellectual Property Protection dApp

TECHNOLOGIES: Truffle, Solidity, Web3, NodeJs, IPFS, Webpack   *Jun. 2018 - Sept. 2018*

- IP Protection dApp developed on Rinkeby testnet first and deployed to Aristotle Chain after.
- It has four different layers: chain layer, smart contract layer, web3(NodeJs) layer and UI layer
- For the web part, it needs a web server like AWS to host the all front-end resource files(or IPFS) and web3 will connect to blockchain provider to interact with smart contracts and send transactions to the chain.
- For all large size documents that users submit, they are all stored on the IPFS, only hash value will be stored into blockchain.

BlackBerry - Monkey

TECHNOLOGIES: Android, adb shell monkey, Android system permission, Android system sign, Git   *Jun. 2017 - Sept. 2017*

- This is an Android application for BlackBerry Spark Day.
- This app encapsulates adb shell monkey command for BlackBerry internal pressure and performance testing.
- Granting Android system permission and system sign to run sudo commands.
- Running monkey command on target apps and generating the testing report for analyzing.

UWaterloo Hackathon - Waterloo Discovery

TECHNOLOGIES: Android, Google Map API, Geolocation, AWS, MySQL, Web Server, Git   *Feb. 2017 - Feb. 2017*

- Developed an Android application about exploring the city of Waterloo for new comers such as international students and travelers in 2 people's team.
- Using Google Map API to locate users, then calculate the distance.
- Using Google Nearby resources.
- Awarded Top 5 Hackathon project.

Accomplishments

Waterloo Hackathon No.1 Team 2016

- Technologies: HTML5, CSS3, AngularJS.
- Developed a widget based on UW Portal SDK in a 5 people team.
- This widget allows students to create and answer questions for different subjects.
- Questions and answers could be ranked by different features.
- Awarded No.1 Hackathon project.

Java Coding Standards Research

Mar. 2016 - Jul. 2016

- Research about Java Coding Standard – Exception chapter.
- Software Reliability Engineering Research.
- Applying testing tools to prove reliability. ex. PMD, SonarQube, FindBugs, JML, Checker Framework, Z3, SMT, SAT.
- Awarded Top Research project by UW Research Group in Summer 2016.

Honors & Awards

2015	**Outstanding Graduated Student**, Tianjin University of Technology	*Tianjin China*
2015	**National Scholarship of China**, Tianjin City Government	*Tianjin China*
2014	**First Class Student Scholarship**, Tianjin University of Technology	*Tianjin China*