

## Lingkun Zeng

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**Summary:** A software developing professional with extensive experience in software and web application development; Successfully launched one blockchain which has been running for more than 1 years and 10 million blocks mined; Track-record in blockchain consensus algorithms, P2P network, cryptography, decentralized system, security and privacy;

### Skills

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<i>Program Languages</i>	Golang, Java, JavaScript, Python, C, SQL, Igor Pro
<i>Web Development</i>	HTML/CSS, Ruby on Rails/React/Angular, Express, Node.js, MongoDB, Bootstrap, Backbone, Docker, Solect.io, Redis, RabbitMQ, Scikit-learn, TensorFlow.
<i>Blockchain</i>	Cryptography, Distributed System, Decentralized P2P Network, Consensus Algorithms, Database, Security, Privacy, Wallet

### Professional Experience

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<b>SeeleTech Inc.</b>	<b>Research Scientist (Tech Leader and Developer)</b>	10/2018 – present
<b>Blockchain Mainnet Research and Development</b> (Launched on 31th March 2019)		<a href="https://github.com/seeleteam/go-seele">https://github.com/seeleteam/go-seele</a>
<ul style="list-style-type: none"><li>▪ Led a team of 5 engineers for developing and researching of mainnet, successfully launched the mainnet and kept it running for more than 1 year with more than 2000 decentralized nodes globally joining in mainnet.</li><li>▪ Developed and implemented a new generation blockchain consensus algorithm which efficiently reduces ASIC computing power advantage (99% to 5%), well decentralizing network and enhancing security. (paper published)</li><li>▪ Redesign and implemented multiply chain sharding technology and cross-shard transaction protocol which enhances network's capacity (x4 times) and transaction speed (2000 tx/s) by only one shard-number parameter.</li><li>▪ Enhanced transactions both inside and across shards with different transaction speeds to 100% accuracy.</li><li>▪ Enhanced mainnet P2P communication and data synchronization security and privacy by implementing peer finding, handshaking, message sending module.</li><li>▪ Automated a platform to deploy mainnet and black-box test on 100 globally located servers by using Vagrant and Ansible; Identified and fixed smart contract and cross-shard transactions bugs.</li><li>▪ Developed SDKs and APIs for applications development on mainnet Blockchain.</li></ul>		
<b>Subchain Research and Development</b> (Launched on 31th March 2020)		<a href="https://github.com/seeleteam/go-seele-sub">https://github.com/seeleteam/go-seele-sub</a>
<ul style="list-style-type: none"><li>▪ Led the design of the economic model and architecture of subchain with ultrafast transaction speed (10000 tx/s) .</li><li>▪ Enhanced block and transaction security to 100% by simplifying deposit, exit, fraud-challenge, epoch-relay, operation-authority operations into a "transaction"; Strengthened interactions security between two blockchains.</li><li>▪ Designed and developed the subchain block, transaction and chain structure and verification from the scratch.</li><li>▪ Developed Stem subchain with implementation of high-speed consensus algorithm PBFT.</li></ul>		
<b>Digital Wallet Application Research and Development</b>		<a href="https://github.com/seeleteam/SeeleWallet">https://github.com/seeleteam/SeeleWallet</a>
<ul style="list-style-type: none"><li>▪ Implemented and deployed a digital wallet with 500 users for cryptocurrency management.</li><li>▪ Instructed junior engineer to implement cryptocurrency sending, receiving, verifying, signing functions which enable easy-to-use as clicking with electron platform.</li><li>▪ Created backend APIs and SDKs package facilitating development of cryptocurrency wallet used on mainnet.</li><li>▪ Digital Wallet can be used for different OS platforms, safely recovered and migrated easily.</li></ul>		
<b>Hardware Cryptocurrency wallet Development</b>		
<ul style="list-style-type: none"><li>▪ Implemented cryptocurrency private key, public key, account generation and management from scratch using BIP39, BIP32, SHA256, PBKDF2 function and Elliptic Curve Digital Signature Algorithm(ECDSA).</li><li>▪ Designed and built an event-driven bluetooth low-energy firmware based on SimpleLink CC26x2 wireless MCU for user to perform all transactions verification and account management.</li></ul>		

**Luminus Devices Inc.**

**Software Developer**

08/2018 – 10/2018

- Used NodeJS with MySQL to develop and maintain inventory database for internal development, manufacture and product teams to track all the data along the development process easily.
- Built up web based data entry and search interfaces to process and import data from database automatically and generate reports and data visualization for PM.

## Other Experience

## Web Application Developer

06/2016 – 07/2018

### Collaborative Online Judge System

[https://github.com/LincolnZeng/Collaborative\\_Online\\_Code\\_Judge](https://github.com/LincolnZeng/Collaborative_Online_Code_Judge)

- Implemented a web-based collaborative code editor supporting multiple users to edit simultaneously (ACE, Socket.io, Redis).
- Designed and developed a single-page web application for coding (Angular, Auth0, Node.js, MongoDB).
- Built a user-code executor service, which can build and execute user's code (Docker, Flask).
- Refactored and improved system throughout by decoupling services using RESTful API and loading balancing by Nginx (REST API, Nginx).

### Real-Time News Scraping and Recommendation System

<https://github.com/LincolnZeng/Lk-Tap-News>

- Implemented a data pipeline, which monitors, scrapes and deduces the latest news (MongoDB, Redis, RabbitMQ, TF-IDF).
- Built a single-page web application for users to browse news (React, Node.js, RPC, SOA, JWT).
- Implemented a click event log processor which collects user's click logs and updates a news preference model for each user (NLP).
- Designed and built an offline training pipeline for news topic modeling (TensorFlow, DNN, NLP).
- Deployed an online classifying service for news topic modeling using trained model.

### Haigy Grocery website, co-developer

[https://github.com/LincolnZeng/Haigy\\_grocery](https://github.com/LincolnZeng/Haigy_grocery)

- Developed an online grocery website with full functionalities for shopping, order managing, manager inventory management. It serves as a simpler version of Amazon website.
- Built all websites based on single-page web applications for shopping (React, Redux, JavaScript, Backbone).
- Implemented backend services for management of shopping cart, customer order, user account, inventory using Ruby on Rails (Ruby on Rails, MySQL).
- All websites can be easily converted to mobile app by PhoneGap/Cordova.

## Education & Research Experience

Lawrence Berkeley National Laboratory	Postdoctoral Fellowship	08/2017 - 09/2018
Institute of Physics, Chinese Academy of Science	Ph.D. in Physics	09/2011 - 05/2017
Lawrence Berkeley National Laboratory	Exchange Scholar	06/2014 - 10/2015
University of Science and Technology of China	B.S. in Material Science	09/2007 - 06/2011

## Industry Publication & Presentations

Paper	Seele's New Anti-ASIC Consensus Algorithm with Emphasis on Matrix Computation ( <a href="#">link</a> )
Shenzhen, China	<b>Keynote Speaker:</b> Seele's Mainnet Design and Innovations
Macau, China	<b>Keynote Speaker:</b> Importance of Layer 2 Subchain and Seele's Stem Subchain Introduction