Bolin Zhang

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Education

University of Illinois at Urbana Champaign **Aug. 2022 – Aug 2023**
Bachelor of Science in Electrical Engineering, GPA: 4.0 / 4.0 *Urbana, United States*

Zhejiang University **Sept. 2020 – (exp.) June 2024**
Bachelor of Engineering in Electrical Engineering and Automation, GPA: 3.98 / 4.0 *Hangzhou, China*

Relevant Coursework

- Data Structures (A)
- Computer Systems & Programming (A)
- Intro to Algs & Models of Comp (A+)
- Database Systems (A)
- Distributed Algorithms (A+)
- Probability with Engrg Applic (A+)

Honors and Awards

Dean's List *University of Illinois at Urbana Champaign, 2023*

National Scholarship *Ministry of Education of People's Republic of China, 2021*

Meritorious Winner in Mathematical Contest in Modeling *Consortium for Mathematics and its Applications, 2021*

Research Interests

- *Distributed Systems*
- *Computer Networks*
- *Computer Security*

Conference Publications

- Xiaohai Dai, **Bolin Zhang**, Hai Jin, and Ling Ren. 2023. ParBFT: Faster Asynchronous BFT Consensus with a Parallel Optimistic Path. In Proceedings of the 2023 ACM SIGSAC Conference on Computer and Communications Security (CCS '23), November 26–30, 2023, Copenhagen, Denmark. ACM, New York, NY, USA, 15 pages. https://doi.org/10.1145/3576915.3623101

Research Experiences

Byzantine Fault Tolerant Protocols **Jan 2023 – Present**
Advisor: Ling Ren, University of Illinois at Urbana Champaign *Urbana, United States*

- Participated in the innovation, implementation, and experiment of Parallel BFT, an adaptive asynchronous SMR protocol making round-complexity improvements on Bolt Dumbo Transformer and Jolteon and Ditto.
- The protocol is implemented in Golang and deployed on 40 AWS instances for experiment.
- Participated in the innovation of Asynchronous Binary Agreement.

NLP Application in Power Systems **June 2021 – August 2021**
Advisor: Huifang Wang, Zhejiang University *Hangzhou, China*

- Constructed a CNN to classify the severity of power system defect texts under Pytorch.
- Trained word vectors as distributed representations and merged synonyms.
- Utilized jieba framework and the lab's own power system defect dictionary for word segmentation.
- Kept the word vectors of numbers fixed while training CNN compared to previous work in the lab. The model reduced the serious deviation rate to 0.80% from 1.03%.

Work Experiences

Blockchain Development Intern **June 2022 – Aug 2022**
Echaincity Technology *Hangzhou, China*

- Proposed a specific smart contract implementation for the paper "A Universal Minimum Value Secure Multi-Party Computation Protocol" submitted to Journal of Software (in Chinese).
- Responsible for the construction, operation, and analysis of the specific experimental environment, as well as writing a major fraction of the manuscript.
- The experiment utilized a centos7 cloud server to deploy 4 hyperchain2.2 nodes. Implemented the zk-snark protocol by libsnark and implemented privacy and/or using the BMR protocol in SPDZ.
- Rewrote BAYC and Uni-Swap (originally in solidity) in Java to deploy and test them on HVM (a VM supports java contracts implemented by the company).
- Proposed a safety attack on the protocol proposed by the paper "A multi-person off-chain payment scheme supporting high concurrency" (in Chinese).

Projects

CSGO Community (curriculum-based project) | *SQL, React, Express.js, Google App Engine* **January 2021**

- Implemented login, market, and user profile interface by React.js.
- Realized REST API and a full-duplex communication between the server and browsers using Express.js.
- Deployed the whole app to the Google App Engine and connected it with Cloud SQL with Unix Socket.
- Included basic CRUD functions, advanced stored procedure, and triggers in SQL.

Technical Skills

Languages: Python, Java, Solidity, HTML/CSS, JavaScript, SQL
Developer Tools: VS Code, Eclipse, Google Cloud Platform
Technologies/Frameworks: Linux, GitHub, Maven