Cai, Yifan

Email: fyc1007261@live.com | Homepage: http://www.yifancai.tech
Address: 3-2-702, 9 Qianchao Road, Oriental Royal, Jianggan District, Hangzhou, Zhejiang, China

EDUCATION

Shanghai Jiao Tong University　　　　　　　　　　　　　　　　　　　Shanghai, China
B.S. Software Engineering, System Software　　　　　　　　　　　　Expected in June 2020
- Overall GPA: 3.77 / 4.30 (88.19/100); Major GPA: 3.88 / 4.30 (89.95/100)
- Honors/Awards: SJTU Scholarships (2016-2017 & 2017-2018), Huawei Scholarships (2017-2018)
- Relevant Courses: Operating Systems (4.0), Distributed Systems (4.0), Computer Architecture (4.0)

PUBLICATIONS

Rethinking Data Management Systems for Disaggregated Data Centers. [Under Review]
　　Qizhen Zhang, **Yifan Cai**, Sebastian Angel, Ang Chen, Vincent Liu and Boon Thau Loo.
　　Submitted for *Conference on Innovative Data Systems Research (CIDR)*, 2020
Intra-day Forecast of Ground Horizontal Irradiance Using Long Short-Term Memory Network (LSTM). [Under Review]
　　Xianglei Huang, Xiuhong Chen, **Yifan Cai**, Haoming Shen, Jiayue Lu
　　Submitted for *IEEE Transactions on Sustainable Energy*, 2019
Consensus-based Data Statistics in Distributed Network Systems. [Paper]
　　Yifan Cai, Jianping He, Wenbin Yu, and Xinping Guan.
　　In the *57th IEEE Conference on Decision and Control, Miami, USA,* December 2018

RESEARCH EXPERIENCE

University of Pennsylvania　　　　　　　　　　　　　　　　　　　　　　　PA, US
Research Intern, *Supervisor: Dr. Vincent Liu*　　　　　　　　　Jul 2019 – Dec 2019 (Expected)
- Conducted research on the impacts of disaggregated data centers on the design of relational databases, analyzed the potential performance drawbacks of the existed disaggregated operating system in the context of data processing, and outlined research challenges of remedying them
- Modified the kernel of LegoOS (A disaggregated operating system published in OSDI'18) to port it on a different type of hardware and deployed it on cloud machines; wrote code of nested loop join, hash join as well as grace hash join and tested their performance on the disaggregated operating system
- Analyzed the relationship between local memory size, the number of remote memory access and the performance degradation of each operation. Designed possible solutions that might reduce the number of remote memory access and improve performance

Lab of System Control and Information Processing　　　　　　　　　Shanghai, China
Research Assistant, *Supervisor: Dr. Jianping He*　　　　　　　　　　　Sep 2017 – Jun 2019
- Designed a protocol in distributed network systems to enable multiple compute nodes do statistics cooperatively, which was the first protocol proposed that could compute the probability density functions in a fully distributed way
- Designed and optimized two probability distribution function (PDF) Calculating algorithms which run under public network conditions and anonymous conditions respectively; responsible for numerical simulations and paper writing

University of Michigan　　　　　　　　　　　　　　　　　　　　　　　　MI, US
Research Intern, *Supervisor: Dr. Xianglei Huang*　　　　　　　　　　　Aug 2018 – Sep 2018
- Built an LSTM-based solar forecasting system on Keras deep learning library
- Designed the predicting model with an error of only approximately 10%, which was less than all of the predicting models in published papers based on the same dataset

NOTABLEE PROJECTS

Distributed File System　　　　　　　　　　　　　　　　　　　　　　Shanghai, China

Computer System Engineering Project, SJTU   Sep 2018 – Jan 2019
- Developed a distributed file system which supported basic Linux interfaces (touch, move, write, unlink, etc.), which worked under single server and multiple clients
- Implemented distributed locks with local cache in the system to ensure the atomicity and the lock performance
- Designed and implemented replication protocols using heartbeats and notifications in case of random failures

Tiger Language Compiler   Shanghai, China
Project of the Compilers Course, SJTU   Sep 2018 – Jan 2019
- Developed a compiler written in C for *Tiger* language followed x86-64 calling conventions, which could generate assembly code
- Realized optimizations such as liveness analysis and register allocations

Smart Electric Appliance Monitoring and Scheduling System   Shanghai, China
Project of the Project Management and Software Development Course, SJTU   Jun 2018 – Jul 2018
- Collaborated with team members to build a smart electric appliance monitoring and scheduling system
- Focused on the back-end Java development of the web application, as well as the integrated hardware controlling system written in Python, which collected information from all the sensors and operates the appliances
- Managed to integrate a series of cross-process communications, including smart scheduling for appliances such as renewable energy simulating, deep learning based solar energy forecasting, and convenient human computer interactions
- Exhibited in the SJTU Software Exhibition, 2018

B+ Tree Based Database   Shanghai, China
Project of the Data Structure Course, SJTU   Jul 2017 – Aug 2017
- Developed a B-plus-tree-based database system which supported CRUD operations at a speed of a million operations per second when running with over a million sets of data
- Designed and implemented a buffer system between disk and memory to improve the performance of reading and writing data

PROFESSIONAL EXPEIRENCE

HikVision   Hangzhou, China
Intern Software System Engineer   Jan 2018 – Feb 2018
- Conducted the work of testing and improving the demo of security monitoring system. The demo was for all potential customers of the monitoring system
- Improved the system through enhancing the performance of multi-threading and socket transmission

Morgan Stanley   Shanghai, China
Algorithmic Trading Trainee   Mar 2017 – Jul 2017
- Attended company camp organized by Morgan Stanley and learnt how new era technology enabled people to make the best and quickest choices with the latest information
- Worked on the project, which simulated a stock market and decides on deal-making moment via market rules and historical data

SKILLS

Languages: Mandarin (Native); English (TOFEL 111).
Programming Languages: C/C++, Python, Java, JavaScript, SQL