

# Keren Zhou

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## EDUCATION BACKGROUND

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- 09/2014-07/2017 **Institute of Computing Technology, Chinese Academy of Sciences** **Beijing, China**  
**Expected Degree:** *M.S. in Computer Architecture*    **GPA:** 90/100  
**Advisor:** Guangming Tan ([www.ncic.ac.cn/~tgm](http://www.ncic.ac.cn/~tgm))
- 09/2010-07/2014 **School of Software, Yunnan University** **Kunming, China**  
**Degree:** *B.E. in Network Engineering*    **GPA:** 92/100 (Rank: 1/290)  
**Advisor:** Wei Zhou    **Thesis:** A Practical Concurrent Quadtree

## RESEARCH EXPERIENCE

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- 06/2015-present **Nvidia-Sugon-ICT Deep Learning Joint Laboratory, Institute of Computing Technology, Chinese Academy of Sciences** **Beijing, China**  
*Research Assistant*  
**High Performance Deep Learning Framework**
  - Involved in ISBI 2015 Challenges (International Symposium on Biomedical Imaging: From Nano to Macro) as a good team player;
  - Improved the performance of neural networks on modern architectures, making Alexnet five times faster and Lenet 12 times faster than Caffe on a 16-core machine;
  - Devised a coarse-grained parallelism strategy with fine-grained vectorization and blocking effects on CPU;
  - Wrote assembly codes to make full use of dual issue and avoid bank conflict on GPU;
  - Developed an auto-tuning tool that can select the best algorithm for each layer;
  - Implemented deep learning models for such biological applications as membrane detection;
  - Published a github repository ([github.com/PAA-NCIC/blitz](https://github.com/PAA-NCIC/blitz)).
- 01/2013-07/2014 **Intelligent Web Laboratory, School of Software, Yunnan University Kunming, China**  
*Research Assistant*  
**Concurrent Data Structures**
  - Designed several concurrent multi-dimensional trees, including the first lock-free quadtree and k-d tree that are much faster than traditional fine-grained lock versions, and published two technical reports: *Parse Concurrent Data Structures: BST as an Example* and *Quadboost: A Scalable Concurrent Quadtree*;
  - Surveyed concurrent data structures, concluded a general method for development and verification, and published a paper: *Study on Multi-Core Data Structure in Shared-Memory*;
  - Adopted a specialized skiplist in a p2p indexing system and published a paper: *Concurrent Skiplist Based Double-Layer Index Framework for Cloud Data Processing*.

## INDUSTRY EXPERIENCE

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- 10/2013-02/2014 **Baidu Inc.** **Beijing, China**  
*Research and Development Intern*
  - Optimized Hadoop workflow with its performance improved by 30%, making it capable of extracting thousands of features from raw text files and loading them into data warehouse;
  - Developed a Hadoop workflow monitoring system that can display multiple workflow states and report exception handling;
  - Reference: Senior Engineer Jing Li, [lijing16@baidu.com](mailto:lijing16@baidu.com).

## PUBLICATIONS

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- [1] **Keren, Zhou**; Guangming, Tan; Wei, Zhou: Quadboost: A Scalable Concurrent Quadtree. In: *arXiv preprint arXiv:1607.03292* (2016)
- [2] Wei, Zhou; **Keren, Zhou**; Zhongzhi, Luan; Shaowen, Yao; Depei, Qian: Study on Multi-Core Data Structure in Shared-Memory. In: *Journal of Software* (2016), Nr. 4, S. 1009–1025
- [3] Zilong, Tan; **Keren, Zhou**; Hao, Zhang; Wei, Zhou: BF-MapReduce: A Bloom Filter Based Efficient Lightweight Search. In: *International Conference on Collaboration and Internet Computing (CIC)* on IEEE, 2015
- [4] Qiang, Li; Maojie, Gu; **Keren, Zhou**; Xiaoming, Sun: Mining User Features for Purchase Prediction in M-Commerce. In: *Data Mining Workshop (ICDMW), 2015 IEEE International Conference on IEEE*, 2015
- [5] Wei, Zhou; Jin, Lu; **Keren, Zhou**; Shipu, Wang; Shaowen, Yao: Concurrent Skiplist Based Double-Layer Index Framework for Cloud Data Processing. In: *Journal of Computer Research and Development* (2015)
- [6] **Keren, Zhou**; Guocheng, Niu; Wuzhao, Zhang; Xueqi, Li; Wenqin, Liu: Parse Concurrent Data Structures: BST as an Example. In: *arXiv preprint arXiv:1505.03759* (2015)
- [7] **Keren, Zhou**; Qian, Yu; Zhenwei, Zhu; Wenjia, Liu: Dynamic Vegas: A Competitive Congestion Control Strategy. In: *Proceedings of International Conference on Computer Science and Information Technology* Springer, 2014, S. 333–340

## AWARDS & HONORS

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2016	National Scholarship (2%)
2016	Merit Student of Chinese Academy of Sciences
2016	Schlumberger Scholarship (3%)
2015	Top 10, Alibaba 1st Middleware Engineering Contest
2014	Bronze Medal, The 2014 ACM-ICPC Asia Anshan Regional Contest
2014	Outstanding B.E. Degree Thesis of Yunnan University
2013	Best Creative Award, Baidu Future Search Engine Contest
2013	Meritorious Winner, Mathematical Contest in Modeling
2011	Second Prize, China Undergraduate Mathematical Contest in Modeling
2011&2012	National Scholarship
2011&2012	Merit Student of Yunnan Province

## SKILLS

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Languages	C, C++, Java, Python, Bash, JavaScript
Parallelism	Pthread, OpenMP, MPI, CUDA, SIMD