

## WANG Ji

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Database Research Lab 3

01-07 COM 1

School of Computing

National University of Singapore

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### EDUCATION

**National University of Singapore**, Singapore

*M.Sc., Candidate*, Computer Science, Fall 2015 - Present

*Advisor*: [Prof. Beng Chin Ooi](#)

**Harbin Institute of Technology**, Harbin, Heilongjiang Province, China

*Bachelor of Engineering*, Computer Science, Fall 2011 - Fall 2015

### PROJECTS

#### BlockBench

*C++, Golang, Shell, Node.js, Python*

BlockBench is the first general benchmarking test suite for private or permissioned blockchain platforms. BlockBench includes a set of macro-benchmark to give an overview of performance of private blockchains, as well as a set of micro-benchmark to test each layer of blockchain platform independently, i.e. consensus layer, data model layer and smart-contract execution layer. This benchmark suite is open sourced for public use. Now it can support Hyperledger fabric, Ethereum and Parity. I designed and implemented the workload driver and blockchain connector. Its academic paper is accepted by SIGMOD 2017. [Project website](#).

Oct 2016 - Present

#### U-Store

*C++, ZeroMQ, Protobuf*

UStore is a distributed storage system utilizing data branching functionality, providing immutability, data sharing and security properties to the upper-layer applications. It supports flexible built-in data structures (e.g., List, Map, Set, Blob, String and Int). The features of this system are sourced from Git and Blockchain. It supports versioning control, branching and collaborative operation like Git, also supports immutable and tamper-proof data structure like Blockchain. We creatively combine characters from B-tree and Merkle-tree as our indexing structure. The system also embraces modern hardware trends such as RDMA to gain high performance. This project is closed-sourced and under construction for the present. Its related paper is submitted to USENIX ATC 2017 under peer review. [Project Website](#).

Spring 2016 - Present

#### COHANA

*Java, Python/Django, Javascript*

COHANA is a data analytics engine built for Cohort Analysis query processing. It supports both traditional cohort analysis and generalized cohort analysis query. Different from traditional relational databases such as MySQL, COHANA utilizes column-oriented data storage. It is able to process queries directly on compressed data. It can leverage multiple encoding schemes such as Run-Length Encoding and Dictionary-based Encoding. Its related paper is accepted by VLDB 2017. I mainly take part in the front-end visualization module for this system.

December 2016 - Present

#### Apache SINGA

*C++, CUDA, CUDNN, SWIG, Cmake, Protobuf, Python*

SINGA is an Apache Incubator open source, distributed training platform for deep learning models, supporting both on CPU cluster and GPU cluster. I implemented the Alexnet and VGG-net model; Stochastic Gradient Descent Algorithms such as Adagrad, Adadelta, Adam; a checkpoint and resume module for training process; and a multi-GPU parallel training module. [My commit list here](#). [Project Github Repository](#).

Fall 2015 - Present

## PERSONAL PROJECTS

### MapReduce in Go

*Golang, Parallel Computing*

A prototype of MapReduce framework implemented using Go RPC. This framework supports two modes, i.e., Sequential and Distributed. Under Sequential mode, all sub-tasks run on Master process sequentially which is easy to debug. Under Distributed mode, Master process schedules all sub-tasks on Worker processes that are registered on the Master. To achieve fault-tolerance, When a Worker fails, the Master can re-assign the sub-task to other available Workers. [Github Repo](#).

## PUBLICATIONS

Anh Dinh, **Ji Wang**, Gang Chen, Rui Liu, Beng Chin Ooi and Kian-Lee Tan. BLOCK-BENCH: A Framework for Analyzing Private Blockchains. *Accepted by SIGMOD 2017*.

Anh Dinh, **Ji Wang**, Sheng Wang, Gang Chen, Chin Wei Ngan, Qian Lin, Beng Chin Ooi, Kian-Lee Tan, Pingcheng Ruan, Zhongle Xie, Hao Zhang and Meihui Zhang. DIGIS: A Distributed Storage With Rich Semantics. *Submitted to USENIX ATC 2017, under peer review*.

## EXPERIENCE

### Research Assistant

March 2017 - Present

Developing research related prototypes and systems.

National University of Singapore  
Singapore

### Teaching Assistant

Spring 2016 - Present

Teaching assistant of CS1020 Data Structure and Algorithm, CS5228 knowledge Discovery and Data Mining and CS2016 Operating Systems.

National University of Singapore  
Singapore

### Teaching Assistant

Fall 2012 & Spring 2014

Teaching assistant of High-level Programming Language for undergraduate students.

Harbin Institute of Technology  
Harbin, China

### Chairman

2013-2015

Organizing daily training and college competitive programming contests.

ACM/ICPC Programming Group of  
Harbin Institute of Technology  
Harbin, China

## SELECTED HONORS

- **NUS Research Scholarship**  
National University of Singapore, 2015 - Present
- **Silver Medal**  
ACM-ICPC Asia regional contest - China Tonghua Invitational Programming Contest, 2013
- **Bronze Medal**  
ACM-ICPC Asia regional contest - China Chengdu Programming Contest, 2013
- **National Scholarship**  
Ministry of Education of The People's Republic of China, 2012
- **National People Scholarship**  
Harbin Institute of Technology, 2011-2013

## SKILLS

**Programming Languages:** C/C++, Golang, Python, Java, Unix Shell

**Working Environment:** Vi/Vim, Git, Linux

**Language:** Chinese, English (CET Band 6)