HAOJUN MA

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EDUCATION

University of Michigan, Ann Arbor (UMich)   *Sep. 2017 ∼ Now*
PhD in Computer Science and Engineering
Research area: distributed systems, formal verification
Mentor: Prof. Manos Kapritsos
GPA: 4.0/4.0
Intended graduation date: Apr 30, 2022

Cornell University   *Jul. 2016 ∼ Dec. 2016*
Visiting Scholar in the Department of Computer Science
Mentor: Prof. Robbert van Renesse

Shanghai Jiao Tong University(SJTU)   *Sep. 2013 ∼ Jun. 2017*
B.E. in Computer Science, Zhiyuan College (**ACM Honored Class**)

PUBLICATIONS

Haojun Ma, Aman Goel, Jean-Baptiste Jeannin, Manos Kapritsos, Baris Kasikci, and Karem A. Sakallah. *I4: Incremental Inference of Inductive Invariants for Verification of Distributed Protocols.* In Symposium on Operating Systems Principles 2019 (SOSP 2019)

Haojun Ma, Aman Goel, Jean-Baptiste Jeannin, Manos Kapritsos, Baris Kasikci, and Karem A. Sakallah. *Towards Automatic Inference of Inductive Invariants.* In Workshop on Hot Topics in Operating Systems (HotOS 19)

PROJECTS

I4: Incremental Inference of Inductive Invariant (Automatic Verification)   *Jul. 2018 ∼ Now*
Research Assistant, Mentor: Prof. Manos Kapritsos   *University of Michigan*

· Aiming to automatically verify distributed systems
· Using a finite instance of an unbounded protocol to infer a general proof
· Combining the power of model checking and automatic reasoning to fully automate this process
· Preliminary results are accepted by HotOS'19 and SOSP 2019
· Using refinement to scale the automatic proof

Armada: Verification of High-Performance Concurrent Programs   *Jun. 2020 ∼ Aug. 2020*
Research Intern, Mentor: Jay Lorch   *Microsoft Research*

· Aimed to prove the correctness of large-scale concurrent program
· Targeted on Hekaton SQL engine
· Improved usibility problems in Armada
· Analyzed unsupported C++ features and evaluated their performance influence

Flexible Fast Paxos   *Sep. 2017 ∼ Mar. 2018*
Research Assistant, Mentor: Prof. Manos Kapritsos   *University of Michigan*

· Aimed to provide strong consistency with low latency for geo-distributed systems
· Used the idea of flexible quorums to reduce datacenter access
· Implemented this protocol and tested it

Software Defined Distributed Systems *May. 2016 ∼ Mar. 2017*
Visiting Scientist, Mentor: Prof. Robbert van Renesse *Cornell University*

· Aimed to build evolvable large-scale distributed systems that run in the cloud
· Added different modules to measure latency, throughput and fault tolerance
· Implemented an interface and applied Yahoo Cloud Serving Benchmark (YCSB) on it
· Re-implemented the system in C++ for better performance and reached 20x speedup

An Authenticated Data Feed for Smart Contracts *Sep. 2016 ∼ Jan. 2017*
Visiting Scientist, Mentor: Prof. Ari Juels *Cornell University*

· Aimed to combine a blockchain front end with a trusted hardware back end
· Focused on testing and reconstructing
· Added unit tests for further updates
· Worked on ABI(Application Binary Interface) encoding and mastered the methods to interact with blockchain

Distributed Deep Learning System *Jul. 2015 ∼ May. 2017*
Research Assistant, Mentor: Prof. Minyi Guo *SJTU*

· Aimed to build a distributed deep learning system with multi-GPU
· sponsored by Huawei Technologies Co., Ltd
· Building our system based on Minerva
· Designed a few ways of task scheduling and implemented some of them with ZeroMQ
· Constructed the InfiniBand network to decrease the network overhead

WORK EXPERIENCE

· **Research Assistant**, UMich	*Sep. 2017 ∼ Now*
· **Research Intern**, System Group, Microsoft Research, Redmond, Washington	*Jun. 2019 ∼ Aug. 2019*
· **Graduate Student Instructor**, Distributed systems, UMich	*Sep. 2019 ∼ Dec. 2019*
· **Intern**, Yahoo, Sunnyvale, California	*Jun. 2019 ∼ Aug. 2019*
· **Teaching Assistant**, Compiler, SJTU	*Spring 2016*
· **Teaching Assistant**, Data Structure, SJTU	*Fall 2014*

AWARDS AND HONORS

· **6th place**, ACM ICPC East Central North America Regional	*2018*
· **rank 445**, Google Code Jam	*2018*
· **Academic Excellence Scholarship**, SJTU	*2016*
· **Top 1000**, Beauty of Programming, Microsoft Research Asia	*2016*
· **Academic Excellence Scholarship**, SJTU	*2015*
· **3rd Prize**, Shanghai Mathematical Contest In Modeling	*2014*
· **Academic Excellence Scholarship**, SJTU	*2014*
· **2nd place**, Super Coder Competition in SJTU	*2014*
· **1st prize**, National Olympiad in Informatics in Provinces	*2012*
· **Silver Medal**, National Olympiad in Informatics	*2012*
· **1st prize**, National Olympiad in Informatics in Provinces	*2011*
· **2nd prize**, National Olympiad in Informatics in Provinces	*2010*

ACTIVITIES AND SERVICES

· **External Reviewer**, OSDI,	*2020*

· **External Reviewer**, ICDCS, *2020*
· **External Reviewer**, ATC, *2019*
· **External Reviewer**, NSDI, *2019*
· **External Reviewer**, OSDI, *2018*
· **External Reviewer**, ATC, *2018*
· **Vice Monitor**, ACM Honored Class, SJTU *Sep. 2013 ∼ Sep. 2014*

SKILLS

· **Programming**: **Proficient**: C/C++, Python, scheme, Pascal.

Basic: Shell, OCaml, Matlab, verilog, Java, JavaScript, C#, Latex.