Yutong Huang

EDUCATION

PURDUE UNIVERSITY, West Lafayette, IN Aug 2018 – May. 2020

Master of Science in Computer Engineering GPA: 3.40/4.0

Research Assistant with Professor Yiying Zhang in WukLab

PURDUE UNIVERSITY, West Lafayette, IN Aug. 2014 – Dec. 2017

Bachelor of Science in Computer Engineering GPA: 3.78/4.0

Undergraduate Research Assistant with Professor Yiying Zhang in WukLab

Undergraduate Teaching Assistant in Computer Design and Prototyping course

PUBLICATIONS

- Yiying Zhang, **Yutong Huang**. (2019). Learned: Operating Systems. *Operating Systems Review*, 53(1), 40–45
- Lu, Yung-Hsiang, George K. Thiruvathukal, Ahmed S. Kaseb, Kent Gauen, Damini Rijhwani, Ryan Dailey, Deeptanshu Malik, **Yutong Huang**, Sara Aghajanzadeh, and Minghao Mina Guo. 2019. "See the World Through Network Cameras." *IEEE Computer* 52 (10): 30–40.
- Yizhou Shan, **Yutong Huang**, Yilun Chen and Yiying Zhang, "**LegoOS: A Disseminated, Distributed OS for Hardware Resource Disaggregation**" in *13th USENIX Symposium on Operating Systems Design and Implementation* ***(OSDI'18) (Best Paper Award)***

POSTERS

- Yizhou Shan, Yilun Chen, **Yutong Huang**, Sumukh Hallymysore, Yiying Zhang, "Lego: A Distributed, Decomposed OS for Resource Disaggregation", Poster at the 26th *ACM Symposium on Operating Systems Principles (SOSP'17)*

RESEARCH EXPERIENCE

Hardware Approach to build OS Functionality *Project Major Contributor* Jan. 2019 – Current

- Designing FPGA friendly, and resource saving buddy allocator for dynamic on-board DRAM allocation
- Implementing single cycle, low latency segment memory permission checking system for memory protection among applications running on a FPGA
- Porting Xilinx open source FPGA-based key value store and conducting performance evaluation to reflect throughput and flexibility of our system

Reinforcement Learning Based Cluster Scheduling *Project Leader* Sep. 2018 – Dec. 2018

- Resolved datacenter resource disaggregation scheduling problem using reinforcement learning techniques with consideration of hardware resource utilization, load balancing, and scalability
- Implemented the scheduling simulation environment, integrated with LSTM network under **TensorFlow**

LegoOS Distributed Operating System *Project Major Contributor* Jun. 2017 – Sep. 2018

- Achieved a single user application running on distributed hardware without modification of the application by designing and implementing distributed user space virtual memory management using **C language**
- Reduced distributed system failure rate and increasing application memory access parallelism by designing memory replication using an asynchronous mechanism to hide performance overhead

- Resolved physical processors and memories resource allocation issue by designing a resource management system as a **Linux kernel** module
- Evaluated LegoOS system performance with Phoenix MapReduce, TensorFlow, and PARSEC Workload

Continuous Analysis of Many CAMeras *Web Team Leader* Jan. 2017 – Dec. 2017

- Advertised achievement of research group by designing entire new web user interface using **JavaScript**, based on bootstrap, and connecting front-end code to MySQL with **Django** framework
- Managed project with Selenium testing framework, GitHub, Heroku, and **Travis CI** for the ease of code quality check
- Recorded development workflow and tips in a well-organized documentation using GitHub pages

WORK EXPERIENCE

Microsoft Research Intern (Cloud Efficiency Team) *Intern Researcher* May. 2019 – Aug. 2019

- Analyzed Latency behavior of heterogeneous virtual machine over-subscriptions in cloud environment. (standard VMs and credit based VMs)
- Designed micro-benchmark for evaluating the behavior of oversubscription of IO intensive workload and CPU intensive workload
- Evaluated disk IO latency of Hype-V hypervisors under oversubscription and compared it with result from KVM

China HuaYunTong Tech Co., Ltd. - intern *Software Engineer* Jul. 2016 – Aug. 2016

- Analyzed small scale server room and Implemented server room monitoring system under CAN bus protocol

TEACHING EXPERIENCE

Purdue Computer Design and Prototyping Course *Teaching Assistant* Aug. 2017 – Dec. 2017

- Explained computer design principle relevant to the lab assignments to students
- Assisted students in debugging Verilog simulation waveform, gate-level waveform, and FPGA problems.

PROJECTS

Robotic Smart Phone Stand Design – Senior Design *Design Team Leader* Aug. 2017 – Dec. 2017

- Implemented the driver of camera on a STM32 F4 chip to be able to repeatedly capture surroundings for facial detection and recognition with programmable interval by **C Language**
- Tested functionality of newly bought sensors and development boards with comprehensive unit-test code

SKILLS

Coding:	C (User level and kernel level), Python, Bash, Verilog, Java, JavaScript
Environment/Tools:	Linux, TensorFlow, Git, Vivado, Django, Travis CI

AWARDS

Jay Lepreau Best Paper Award at OSDI ‘18	Oct 2018
USENIX Student Grant for OSDI ‘18	Sep 2018
Dean’s List & Semester Honors (6 semesters)	Fall 2015 – Fall 2018