Chun-Feng Wu

Curriculum Vitae

PERSONAL DETAILS

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EDUCATION

Ph.D. Candidate Department of CSIE 2016-NOW
GPA: 4.20/4.30
National Taiwan University, Taiwan
Advisor: Tei-Wei Kuo & Yuan-Hao Chang
Thesis: Enabling Low Cost High Performance Unified Memory System (Ongoing)

MSc. Department of Computer Science 2014-2016
GPA: 3.90/4.30
National Tsing Hua University, Taiwan
Advisor: Yeh-Ching Chung
Thesis: Hybrid Mechanisms to Improve Write Scenarios for Cloud Storage Services

BSc. Department of CSIE 2010-2014
GPA: 3.72/4.0
National Central University, Taiwan
Advisor: Li-Der Chou

RESEARCH INTERESTS

Memory/storage systems and architectures, Operating systems, AI (e.g., AI Accelerator Designs), Non-Volatile Memory and Embedded systems.

PUBLICATIONS

Journal Papers

1. **Chun-Feng Wu**, Yuan-Hao Chang, Ming-Chang Yang, and Tei-Wei Kuo, "When Storage Response Time Catches Up with Overall Context Switch Overhead, What is Next?", accepted and to appear in IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD). (Integrated with ACM/IEEE CODES+ISSS'20).
2. Yao-Wen Kang, **Chun-Feng Wu**, Yuan-Hao Chang, Tei-Wei Kuo and Shu-Yin Ho, "On Minimizing Analog Variation Errors to Resolve the Scalability Issue of ReRAM-based Crossbar Accelerator", accepted and to appear in IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD). (Integrated with ACM/IEEE EMSOFT'20).
3. Gaddisa Olani Ganfure, **Chun-Feng Wu**, Yuan-Hao Chang, and Wei-Kuan Shih, "DeepPrefetcher: A Deep Learning Framework for Data Prefetching in Flash Storage Devices", accepted and to appear in IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD). (Integrated with ACM/IEEE CASES'20).
4. Ming-Chang Yang, **Chun-Feng Wu**, Shuo-Han Chen, Yi-Ling Lin, Che-Wei Chang, and Yuan-Hao Chang, "On Minimizing Internal Data Migrations of Flash Devices via Lifetime-Retention Harmonization", accepted and to appear in IEEE Transactions on Computers (TC).

5. Ming-Chang Yang, Yuan-Hao Chang, Tei-Wei Kuo, and **Chun-Feng Wu**, "Request Flow Coordination for Growing-Scale Solid-State Drives", accepted and to appear in IEEE Transactions on Computers (TC).
6. **Chun-Feng Wu**, Yuan-Hao Chang, Ming-Chang Yang, and Tei-Wei Kuo, "Joint Management of CPU and NVDIMM for Breaking Down the Great Memory Wall", IEEE Transactions on Computers (TC), vol. 69, no. 5, pp. 722-733, May. 2020.
7. **Chun-Feng Wu**, Ming-Chang Yang, Yuan-Hao Chang, and Tei-Wei Kuo, "Hot-Spot Suppression for Resource-Constrained Image Recognition Devices with Non-Volatile Memory", IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), vol. 37, no. 11, pp. 2567-2577, Nov. 2018. (Integrated with ACM/IEEE EMSOFT 2018)

Conference Papers

1. Yi-Shen Chen, **Chun-Feng Wu**, Yuan-Hao Chang, and Tei-Wei Kuo, "A Write-friendly Arithmetic Coding Scheme for Achieving Energy-Efficient Non-Volatile Memory Systems", ACM/IEEE Asia and South Pacific Design Automation Conference (ASP-DAC), Tokyo, Japan, Jan. 18-21, 2021.
2. Gaddisa Olani Ganfure, **Chun-Feng Wu**, Yuan-Hao Chang, and Wei-Kuan Shih, "DeepGuard: Deep Generative User-behavior Analytics for Ransomware Detection", IEEE International Conference on Intelligence and Security Informatics (ISI), Nov. 9-10, 2020.
3. Yun-Sheng Chang, Yao Hsiao, Tzu-Chi Lin, Che-Wei Tsao, **Chun-Feng Wu**, Yuan-Hao Chang, Hsiang-Shang Ko, and Yu-Fang Chen, "Determinizing Crash Behavior with a Verified Snapshot-Consistent Flash Translation Layer", USENIX Symposium on Operating Systems Design and Implementation (OSDI), Banff, Alberta, Canada, Nov. 4-6, 2020. (Acceptance rate: 17.6% (70/398)) ***(Top Conference)***
4. **Chun-Feng Wu**, Yuan-Hao Chang, Ming-Chang Yang, and Tei-Wei Kuo, "When Storage Response Time Catches Up with Overall Context Switch Overhead, What is Next?", ACM/IEEE International Conference on Hardware/Software Codesign and System Synthesis (CODES+ISSS), Germany, Sep. 20 - 25, 2020. (Journal Track, Integrated with IEEE TCAD). (Acceptance rate: 21.9%(28/128)) ***(Top Conference)***
5. Yao-Wen Kang, **Chun-Feng Wu**, Yuan-Hao Chang, Tei-Wei Kuo and Shu-Yin Ho, "On Minimizing Analog Variation Errors to Resolve the Scalability Issue of ReRAM-based Crossbar Accelerator", ACM/IEEE International Conference on Embedded Software (EMSOFT), Germany, Sep. 20 - 25, 2020. (Journal Track, Integrated with IEEE TCAD) ***(Top Conference)***
6. Gaddisa Olani Ganfure, **Chun-Feng Wu**, Yuan-Hao Chang, and Wei-Kuan Shih, "DeepPrefetcher: A Deep Learning Framework for Data Prefetching in Flash Storage Devices", ACM/IEEE International Conference on Compilers, Architecture, and Synthesis for Embedded Systems (CASES), Germany, Sep. 20 - 25, 2020. (Journal Track, Integrated with IEEE TCAD). ***(Top Conference)***
7. Shuo-Han Chen, Yu-Pei Liang, Yuan-Hao Chang, Yun-Fei Liu, **Chun-Feng Wu**, Hsin-Wen Wei, and Wei-Kuan Shih, "Reinforcing the Energy Efficiency of Cyber-Physical Systems via Direct and Split Cache Consolidation on MLC STT-RAM", ACM Symposium on Applied Computing (SAC), Brno, Czech Republic, Mar. 30 - Apr. 3, 2020.
8. Yu Ting Ho, **Chun-Feng Wu**, Ming-Chang Yang, and Yuan-Hao Chang, "Replanting Your Forest: NVM-friendly Bagging Strategy for Random Forest", IEEE Nonvolatile Memory Systems and Applications Symposium (NVMSA), Hangzhou, China, August 18-21, 2019 (Best Paper Award)
9. Shuo-Han Chen, Ming-Chang Yang, Yuan-Hao Chang, and **Chun-Feng Wu**, "Enabling File-Oriented Fast Secure Deletion on Shingled Magnetic Recording Drives", ACM/IEEE Design Automation Conference (DAC), Las Vegas, Nevada, USA, Jun. 2-6, 2019. (Acceptance rate: 24.8%(202/815) ***(Top Conference)***
10. **Chun-Feng Wu**, Ming-Chang Yang, Yuan-Hao Chang, and Tei-Wei Kuo, "Hot-Spot Sup-

pression for Resource-Constrained Image Recognition Devices with Non-Volatile Memory", ACM/IEEE International Conference on Embedded Software (EMSOFT), Torino, Italy, Sep. 30 - Oct. 5, 2018. (Journal Track, Integrated with IEEE TCAD) ***(Top Conference)***

11. **Chun-Feng Wu**, Ming-Chang Yang, and Yuan-Hao Chang, "Improving Runtime Performance of Deduplication System with Host-Managed SMR Storage Drives", ACM/IEEE Design Automation Conference (DAC), San Francisco, USA, Jun. 24-28, 2018. (Acceptance rate: 24.3%(168/691)) ***(Top Conference)***
12. **Chun-Feng Wu**, Tse-Chuan Hsu, Hongji Yang, and Yeh-Ching Chung, "File Placement Mechanisms for Improving Write Throughputs of Cloud Storage Services Based on Ceph and HDFS", Proceedings of IEEE International Conference on Applied System Innovation (ICASI), Sapporo, Japan, May 2017. (The First Prize Paper Award)
13. Su-Shien Ho, **Chun-Feng Wu**, Jiazheng Zhou, Wenguang Chen, Ching-Hsien Hsu, Hung-Chang Hsiao, and Yeh-Ching Chung. "Distributed Metaserver Mechanism and Recovery Mechanism Support in Quantcast File System", IEEE Computer Software and Applications Conference (COMPSAC), pages 758 - 763, Taichung, Taiwan, July. 2015.

EXPERIENCES

1. Research Assistant at Academia Sinica, 2017-Now.
2. IEEE Taipei Section Webchair, 2019-Now.
3. Invited Talk Speaker of The 8th IEEE Non-Volatile Memory Systems and Applications Symposium (NVMSA), 2019.
4. PhD Forum Speaker of The 30th VLSI Design/CAD Symposium, 2019.
5. Forum Speaker of The CCF China Test Conference (CTC), 2020.

PROJECTS

SSBox(NebulaBox) 2014-2016

National Tsing Hua University, Sytem Software Laboratory, Advisor: Yeh-Ching Chung

This project aims to provide a private cloud storage service for users. Our team designs a distributed storage system, SSBox, with high accessibility and reliability. We provide PaaS layer services for programmers to access our SSBox by RESTful API. In addition, SSBox is reliable enough to endure hundred of thousand of users to access simultaneously.

Virtual Desktop Infrastructure 2014-2015

National Tsing Hua University, System Software Laboratory, Advisor: Yeh-Ching Chung

This project aims to provide Virtual Desktops to cost down the hardware price for educational institutes. We apply a real-time virtual desktop service by using virtualization frameworks, such as OpenStack and Docker. Users just need a browser and stable Internet for accessing different Operating Systems. We also design a client side by OpenStack APIs and this design makes users to create virtual desktops easier.

SKILLS

Programming Languages
C/C++, Python, Java, Objective-C, C#, Parallel Programming(MPI), PHP, JavaScript

Tools
Docker, OpenStack, Hadoop, Ceph(Thesis), Redis, Intel Pin, Valgrind, Caffe, TensorFlow

English Certification
TOEFL: 95

AWARDS

1. **Scholarship** in "Elite Scholarship" sponsored by Elite-Well Education Foundation(財團法人平安菁教育英基金會), 2020.
2. **Scholarship** in "Student Travel Grants" sponsored by Embedded Systems Week (ESWEEK), 2018.
3. **Scholarship** in "Outstanding Students Conference Travel Grant" sponsored by Foundation for the Advancement of Outstanding Scholarship(傑出人才發展基金會), 2018.
4. **Scholarship** in "The international conference scholarship for young researchers" sponsored by Academia Sinica, 2018.
5. **Top 10%, A-** in "Collegiate Programming Examination" held by ACM-ICPC Contest Council for Taiwan, 2013.
6. **Best Debater Award** in debate competition on "The future of virtual machine software: Xen vs VMware" held in Professor Li-Der Chou's course of "Operating Systems", Department of Computer Science, National Central University Taiwan, 2013.

SHORT BIOGRAPHY

Chun-Feng Wu received his B.S. and M.S. degrees in department of Computer Science and Information Engineering from National Central University and in Department of Computer Science from National Tsing-Hua University in 2014 and 2016, respectively.He is currently working toward the PhD degree in Department of Computer Science and Information Engineering from National Taiwan University, Taipei, Taiwan. Meanwhile, he serves in R&D alternative service at Institute of Information Science, Academia Sinica, Taipei, Taiwan. He has published 19 research papers, which were mainly published in 7 top journals (including several premier ACM/IEEE Transactions, e.g., IEEE TC and IEEE TCAD) and 7 top conferences (including ACM/IEEE DAC, ACM/IEEE EMSOFT, ACM/IEEE CODES+ISSS, ACM/IEEE Cases and USENIX OSDI). His primary research interests include memory/storage systems and architectures, operating systems, AI (e.g., AI accelerator designs), non-volatile memory and embedded systems. He is a student member in IEEE.