Yang Cheng

newplan001@163.com · (+86) 186-6182-8256 · https://chengyang.info

Education

Tsinghua University, Beijng, China 2016.09 – Present

Ph.D. in Computer Science and Technology
Advisor(s): Prof. Jianping Wu and Assoc. Prof. Dan Li
Research Interests: Distributed System, Networking System, and Performance Optimization

University of Electronic Science and Technology of China, Chengdu, China 2012.09 – 2016.07

B.Eng. in Software Engineering, graduating with honors
GPA/Ranking: 3.8/4.0, 1st/103

Working Experience

Microsoft Research Asia, Research Intern 2018.04 – 2018.10

- Leading the AIPre project to accelerate end-to-end DL workflows in the cloud.

Chengdu Haocaiduo Agricultural Technology Co., Ltd., Developing Engineer 2014.06 – 2014.07

- Developing intelligent agricultural management system to simplify the management of crops;

Tsinghua University, Teaching Assistant

- [00240112-90], [undergraduates], Next Generation Internet Spring of 2019
- [00240112-90], [undergraduates], Next Generation Internet Spring of 2018
- [74120023-0], [graduates], Security Foundation and Frontier of Cyberspace Autumn of 2017

Selected Projects

AIPre: Boosting end-to-end DL workflows in the cloud 2018.04 – 2018.10

- Evaluate the performance of deep learning systems (TF, PyTorch, Caffe), from an end-to-end perspective;
- Offload data preprocessing workloads to FPGAs to remove the CPU bottleneck in end2end DL workflows;
- Overlap gradient computation and error propagation by re-scheduling BP workflows when training NNs.

BML: A scalable and high-performance DML system 2017.09 – 2018.01

- Re-design synchronization paradigms for TensorFlow to reduce communication cost of distributed training;
- Incorporate RDMA and BCube topology to achieve high-performance data communication primitives;
- Outperform the PS and the Ring paradigms by up to 2.4× and 1.2× training throughput, respectively.

Virtual desktop management and control system 2015.01 – 2015.08

- Design a high-performance, cross-platform virtual desktop management system, with the SPICE protocol;
- Implement tin-clients on Android and PC platforms, to interact with the VMs running on remote server;
- Design and implement SMx(2/3/4)-based encryption mechanism to protect user information from leakage

Selected Publications

[1] **Yang Cheng**, Dan Li, Zhiyuan Guo, Binyao Jiang, Jiaxin Lin, Xi Fan, Jinkun Geng, Xinyi Yu, Wei Bai, Lei Qu, Ran Shu, Peng Cheng, Yongqiang Xiong, and Jianping Wu, "DLBooster: Boosting End-to-End Deep Learning Workflows with Offloading Data Preprocessing Pipelines", *In Proceedings of the 48th International Conference on Parallel Processing (ICPP 2019)*

[2] Shuai Wang, Dan Li, Jinkun Geng, Yue Gu, and **Yang Cheng**, "Impact of Network Topology on the Performance of DML: Theoretical Analysis and Practical Factors", *In IEEE INFOCOM 2019-IEEE Conference on Computer Communications (INFOCOM 2019)*

[3] Songtao Wang, Dan Li, **Yang Cheng**, Jinkun Geng, Yanshu Wang, Shuai Wang, Shutao Xia, and Jianping Wu, "BML: A High-performance, Low-cost Gradient Synchronization Algorithm for DML Training", *In Thirty-second Advances in Neural Information Processing Systems (NeurIPS 2018)*

[4] **Yang Cheng**, Jinkun Geng, Yanshu Wang, Junfeng Li, Dan Li, and Jianping Wu, "Bridging machine learning and computer network research: a survey", *CCF Transactions on Networking (CCF ToN), 2018*

[5] Zhetao Li, Fei Gui, Jinkun Geng, Dan Li, Zhibo Wang, Junfeng Li,**Yang Cheng**, and Usama Zafar, "Dante: Enabling FOV-Aware Adaptive FEC Coding for 360-Degree Video Streaming", *In Proceedings of the 2nd Asia-Pacific Workshop on Networking (APNet 2018)*

[6] Jinkun Geng, Dan Li,**Yang Cheng**,Shuai Wang, and Junfeng Li, "HiPS: Hierarchical Parameter Synchronization in Large-Scale Distributed Machine Learning", *In Proceedings of the 2018 Workshop on Network Meets AI & ML (NetAI 2018)*

[7] Junfeng Li, Dan Li, Yukai Huang, **Yang Cheng**, and Ruilin Ling, "Quick NAT: High performance NAT system on commodity platforms", *In 2017 IEEE International Symposium on Local and Metropolitan Area Networks (LANMAN 2017)*

Selected Honors

Outstanding graduates in Sichuan province	Jun. 2016
Tang Lixin Scholarship, UESTC	Sep. 2015
National Scholarship	Sep. 2015
National Endeavor Scholarship	Sep. 2013
First prize, awarded on the 8th National College Student Information Security Contest	Aug. 2015
First prize, awarded on the 6th National College Students Mathematics Competition, Sichuan	Nov. 2014