

Yang Zhou

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Curriculum Vitae

Education

- Ph.D. **Computer Science, Harvard University, Cambridge, MA, USA, 2018–Present.**
Advisor: Professor [Minlan Yu](#) and [James Mickens](#)
- M.S. **Computer Science, Harvard University, Cambridge, MA, USA, 2018–2021.**
- B.S. **Computer Science, Peking University, Beijing, China, 2014–2018.**
Advisor: Professor [Tong Yang](#)

Selected Publications

- 2023 **Yang Zhou**, Zezhou Wang, Sowmya Dharanipragada, and Minlan Yu. Electrode: Accelerating Distributed Protocols with eBPF. NSDI 2023.
- 2022 **Yang Zhou**, Ying Zhang, Minlan Yu, Guangyu Wang, Dexter Cao, Eric Sung, and Starsky Wong. Evolvable Network Telemetry at Facebook. NSDI 2022.
- 2022 **Yang Zhou**, Hassan Wassel, Sihang Liu, Jiaqi Gao, James Mickens, Minlan Yu, Chris Kennelly, Paul Turner, David Culler, Hank Levy, and Amin Vahdat. Carbink: Fault-Tolerant Far Memory. OSDI 2022.
- 2022 **Yang Zhou**, Varun Gandhi, Mark Wilkening, James Mickens, and Minlan Yu. NFSshield: Securing NIC-Accelerated Network Functions in the Cloud. Pending submission.
- 2018 Tong Yang, Jie Jiang, Peng Liu, Qun Huang, Junzhi Gong, **Yang Zhou**, Rui Miao, Xiaoming Li, and Steve Uhlig. Elastic Sketch: Adaptive and Fast Network-Wide Measurements. SIGCOMM 2018.
- 2018 **Yang Zhou**, Tong Yang, Jie Jiang, Bin Cui, Minlan Yu, Xiaoming Li, and Steve Uhlig. Cold Filter: A Meta-Framework for Faster and More Accurate Stream Processing. SIGMOD 2018.
- 2018 **Yang Zhou**, Omid Alipourfard, Minlan Yu, and Tong Yang. Accelerating Network Measurement in Software. SIGCOMM CCR 2018.
- 2018 Omid Alipourfard, Masoud Moshref, **Yang Zhou**, Tong Yang, and Minlan Yu. A Comparison of Performance and Accuracy of Measurement Algorithms in Software. ACM Symposium on SDN Research (SOSR) 2018.
- 2017 Tong Yang, **Yang Zhou**, Hao Jin, Shigang Chen, and Xiaoming Li. Pyramid Sketch: A Sketch Framework for Frequency Estimation of Data Streams. VLDB 2017.

Work Experience

- 09/2021–Present **Student Researcher, Google, CA, Mentor: [Hank Levy](#) and [Hassan Wassel](#).**
- Continue working on the fault-tolerant remote memory.
 - Work on the fault tolerance of resource-disaggregated computations.
- 06/2021–09/2021 **Research Intern, Google, CA, Mentor: [Hank Levy](#) and [Hassan Wassel](#).**
- Work on fault tolerance for application-integrated far memory system.
 - Propose a span-based erasure coding scheme to encode different sizes of objects.
 - Design a RMA-based data-parity consistency protocol for swapping out spans.
- 07/2020–09/2020 **Research Intern, VMware Research, CA, Mentor: [Israel Cidon](#) and [Christos Karamanolis](#).**

- Accelerate geo-distributed data analytics and save WAN traffic cost, by applying traffic redundancy elimination (TRE) technique to data analytics jobs.
 - Hack Alluxio, an in-memory data cache platform, to enable TRE when sending data across different data centers.
- 11/2019–05/2020 **Research Collaborator**, *Facebook*, CA, Mentor: [Ying Zhang](#).
- Work on Facebook change-aware network telemetry system.
 - Layering design along the data collection pipeline to tolerate changes.
 - Incorporate cross-layer dependency in monitoring system to help troubleshooting.
- 03/2018–05/2018 **System Operation and Maintenance Intern**, *SenseTime*, Beijing.
- Wrok on Ceph setup, testing, maintenance, monitoring, and alerting.

Research Experience

Harvard University

- 10/2018–09/2019 **Securing NIC-accelerated network functions in the Cloud.**
- Build SGX-like TEEs for NFs in SmartNICs under multi-tenant cloud environment.
 - Pervasively virtualize hardware accelerators (similar to SR-IOV); Enforce single-owner semantics for on-NIC RAM and caches; Provide dedicated bus bandwidth for each network function.

Yale University (interned at Minlan's group)

- 06/2017–01/2018 **NF chain performance diagnosis; network measurement acceleration.**

Peking University

- 04/2016–03/2017 **Improving the accuracy and speed of approximate data stream processing.**

Teaching Experience

Spring 2021 **TA for CS145 Networking at Scale**, *Harvard University, MA.*
Professor Minlan Yu

Fall 2018 **TA for Algorithm Design and Analysis**, *Peking University, Beijing.*
Professor Tong Yang

Highlighted course project

- 03/2019–05/2019 **Direct message passing in serverless platform**, Harvard CS260r.
- Add the feature of direct message passing to opensource serverless platform – OpenWhisk
 - Use docker overlay network for socket connection; Implement a zero-overhead DNS service among serverless containers. [Report](#) and [code](#)

Awards & Honors

- 2022 Google Ph.D. Fellowship in Systems and Networking
- 2022 Finalist, Meta/Facebook Ph.D. Fellowship in Networking
- 2022 USENIX Student Grant, OSDI'22
- 2022 USENIX Student Grant, NSDI'22
- 2019 USENIX Student Grant, NSDI'19
- 2018 Top Ten undergraduate Dissertation Award of PKU EECS (10/327)
- 2018 New Academic Star Award of EECS (1/193), Peking University
- 2017 Arawana Scholarship (2/193), Peking University

- 2017 Exceptional Award for Academic Innovation (2/193), Peking University
- 2017 Merit Student Honor, Peking University
- 2017 Honorable Mention in Mathematical Contest in Modelling
- 2016, 2017 Peking University ACM/ICPC Third Prize, Peking University
- 2016 Pinyou Hudong Scholarship, Peking University
- 2015 Peking University ACM Summer School First Prize, Peking University
- 2015 May Fourth Scholarship, Peking University
- 2015 Academic Improvement Honor, Peking University

Skills

- Tools DPDK, SmartNIC (FPGA, multi-core), SGX enclave, gem5, docker
- Languages C, C++, Vivado HLS, Verilog, Python, Java, Rust, Scala, C#, SQL

Talks

- Nov 17, 2022 **Carbink: Fault-Tolerant Far Memory**, WORDS Workshop, San Diego, CA.
- July 11, 2022 **Carbink: Fault-Tolerant Far Memory**, OSDI, Carlsbad, CA.
- July 1, 2022 **Carbink: Fault-Tolerant Far Memory**, Microsoft Research Redmond, WA.
- June 28, 2022 **Carbink: Fault-Tolerant Far Memory**, Google, Virtual.
- April 6, 2022 **Evolvable Network Telemetry at Facebook**, NSDI, Seattle, WA.
- Mar 24, 2022 **Carbink: Fault-Tolerant Far Memory**, Google, Virtual.
- Mar 31, 2022 **Evolvable Network Telemetry at Facebook**, Boston University, Boston, MA.
- Mar 16, 2022 **Evolvable Network Telemetry at Facebook**, Meta, Virtual.