Pengcheng **Xu**

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Aut inveniam viam aut faciam.
"I'll either find a way or make one."—Hannibal

Education

D-INFK, ETH Zürich — *Zürich, Switzerland*

Doctorate Computer Science — *Sept. 2021 - Jul. 2027*

- Thesis supervisor: Prof. Dr. Timothy Roscoe

D-INFK, ETH Zürich — *Zürich, Switzerland*

Computer Science MSc — *Sept. 2021 - Sept. 2023*

- Part of the Direct Doctorate in Computer Science program
- Thesis supervisor: Prof. Dr. Torsten Hoefler

School of EECS, Peking University — *Beijing, China*

B.Sc. Computer Science and Technology — *Sept. 2017 - Jul. 2021*

- "*Summa cum laude*"; Member of the *Turing Class* Honor Program
- Thesis supervisor: Prof. Yun Liang

Academic Experiences

Scalable Parallel Computing Lab (SPCL) @ ETH Zürich — *Zürich, Switzerland*

Master Thesis (with Prof. Dr. Torsten Hoefler) — *Mar. 2023 - Sept. 2023*

NetOS, Systems Group @ ETH Zürich — *Zürich, Switzerland*

Semester Project (with Prof. Dr. Timothy Roscoe) — *Oct. 2022 - Feb. 2023*

Center for Energy-efficient Computing and Applications (CECA) @ PKU — *Beijing, China*

Undergraduate Research (with Prof. Yun Liang) — *Dec. 2017 - Jul. 2021*

Parallel Systems Architecture Lab (PARSA) @ EPFL — *Lausanne, Switzerland (remote)*

Research Intern (with Prof. Babak Falsafi) — *Jul. 2020 - Jan. 2021*

XG Lab @ Alibaba DAMO Academy — *Beijing, China*

Academic Collaboration (with Prof. Chenren Xu & Dr. Pengyu Zhang) — *Sept. 2020 - Jan. 2021*

PKU Student Supercomputing Competition Team (PKUSC) — *Beijing, China*

Team Leader — *Nov. 2017 - Nov. 2020*

Work Experiences

SenseTime — *Beijing, China*

Research Intern — *Jun. 2019 - Dec. 2019*

Teaching Experiences

System Programming and Computer Architecture, ETH Zürich — *Zürich, Switzerland*

Assistenz (head TA) — *2024*

Advanced Operating Systems, ETH Zürich — *Zürich, Switzerland*
Assistentz (TA), Hilfsassistenz (HA) — *2022 - 2024*

Computer Systems, ETH Zürich — *Zürich, Switzerland*
Hilfsassistenz (HA) — *2022*

Computer Networks (Honor Track), Peking University — *Beijing, China*
Teaching Assistant (TA) — *Sept. 2020 - Feb. 2021*

Publications

Anastasiia Ruzhanskaia, **Pengcheng Xu**, David Cock, Timothy Roscoe. "Rethinking Programmed I/O for Fast Devices, Cheap Cores, and Coherent Interconnects" — *Online*
arXiv — *Oct. 2024*

Pengcheng Xu. "Full-System Evaluation of the sPIN In-Network-Compute Architecture" — *ETH Zurich*
ETH Library — *Sept. 2023*

Pengcheng Xu. "Enzian Firmware Resource Interface" — *ETH Zurich*
ETH Library — *Feb. 2023*

Zejia Fan, Yuchen Gu, Zhewen Hao, Yueyang Pan, **Pengcheng Xu**, Yuxuan Yan, Fangyuan Yang, Zhenxin Fu, Yun Liang. "Critique of 'MemXCT: Memory-Centric X-Ray CT Reconstruction With Massive Parallelization' by SCC Team From Peking University" — *Journal*
IEEE Transactions on Parallel and Distributed Systems (TPDS) — *Jan. 2022*

Qingcheng Xiao, Size Zheng, Bingzhe Wu, **Pengcheng Xu**, Xuehai Qian, Yun Liang. "HASCO: Towards Agile HArdware and Software CO-design for Tensor Computation" — *Worldwide*
International Symposium on Computer Architecture (ISCA) — *June 2021*

Yihua Cheng, Zejia Fan, Jing Mai, Yifan Wu, **Pengcheng Xu**, Yuxuan Yan, Zhenxin Fu, Yun Liang. "Critique of 'Planetary Normal Mode Computation: Parallel Algorithms, Performance, and Reproducibility' by SCC Team From Peking University" — *Journal*
IEEE Transactions on Parallel and Distributed Systems (TPDS) — *Jan. 2021*

Pengcheng Xu, Yun Liang. "Automatic Code Generation for Rocket Chip RoCC Accelerators" — *Virtual Workshop*
Fourth Workshop on Computer Architecture Research with RISC-V (CARRV 2020), co-located with ISCA 2020 — *May 2020*

Honors & Awards

2020 **Second Place**, Virtual Student Cluster Competition at SC'20 — *Global Event*
- Worked as leader in charge of cloud cluster management and the mystery task
- Team ranked top on the CESM (Community Earth System Model) application

2019 **First Prize**, ASC Student Supercomputing Challenge 2019 — *Dalian, China*
- Worked as leader in charge of system install and administration, benchmarks, logistics, and the mystery task

2019 **SenseTime Scholarship 2019** — *Beijing, China*

2018 **Award for Scientific Research**, Peking University — *Beijing, China*

2018 **Prize of Excellence**, IBM OpenPOWER/CAPI and OpenCAPI Heterogeneous Computing Design Contest — *Beijing, China*
- Worked to build an FPGA accelerator for *BCrypt* (widely-used hashing algorithm) on Xilinx UltraScale+ FPGAs
- Developed on the OpenCAPI FPGA-host platform for high-performance, cloud-oriented acceleration

2018 **Second Prize**, Peking University Collegiate Programming Contest — *Beijing, China*

2018 **Accepted & Passed**, Google Summer of Code 2018 with Gentoo Foundation — *Global Event*
- Worked to develop solution to *modularize the Android system upgrade with Portage*
- Enabled utilization of mature Unix technologies in mobile computing