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

Assistentz (TA), Hilfsassistenz (HA)

Zürich, Switzerland

2022 - 2024

Computer Systems, ETH Zürich

Hilfsassistenz (HA)

Zürich, Switzerland

2022

Computer Networks (Honor Track), Peking University

Teaching Assistant (TA)

Beijing, China

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"

arXiv

Online

Oct. 2024

Timo Schneider, **Pengcheng Xu**, Torsten Hoefler. "FPsPIN: An FPGA-based Open-Hardware Research Platform for Processing in the Network"

arXiv

Online

May. 2024

Pengcheng Xu. "Full-System Evaluation of the sPIN In-Network-Compute Architecture"

ETH Library

ETH Zurich

Sept. 2023

Pengcheng Xu. "Enzian Firmware Resource Interface"

ETH Library

ETH Zurich

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"

IEEE Transactions on Parallel and Distributed Systems (TPDS)

Journal

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"

International Symposium on Computer Architecture (ISCA)

Worldwide

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"

IEEE Transactions on Parallel and Distributed Systems (TPDS)

Journal

Jan. 2021

Pengcheng Xu, Yun Liang. "Automatic Code Generation for Rocket Chip RoCC Accelerators"

Fourth Workshop on Computer Architecture Research with RISC-V (CARRV 2020), co-located with ISCA 2020

Virtual Workshop

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