Xinyu Chen

Assistant professor
at Hong Kong University of Science and Technology (Guangzhou)

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EDUCATION

National University of Singapore | *Ph.D. in Computer Science*   **2017/8 - 2022/5**
- Supervisor: Prof. Bingsheng He

Harbin Institute of Technology | *B.E. in Microelectronics*   **2012/8 - 2016/6**
- GPA: 92.02 / 100 (Ranking: 2 / 90)

RESEARCH INTERESTS

- Domain-specific accelerator
- Heterogeneous computing with FPGAs/GPUs/NPUs
- Big data management systems
- Datacenter resource disaggregation

PROFESSIONAL EXPERIENCE

Hong Kong University of Science & Technology (Guangzhou)   **Jan 2024 – Now**
Assistant Professor at Microelectronics Thrust   Guangdong
- Conduct research and teaching

HiSilicon, HUAWEI   **Sep 2022 – Jan 2024**
Principal Engineer   Guangdong
- Design the programmable hardware accelerator for big data analytics and database systems, which will be integrated into Huawei's next-generation DPU.
- Participate in the architecture design of network processor (NP).

Alibaba Group   **May 2017 – Jul 2017**
Intern of PAI (Platform For AI)   Hangzhou
- Analyze the performance of the CNN accelerator on Intel Stratix 10 devices and identify system bottlenecks.

AMD-Xilinx   **Aug 2015 – Jul 2016**
Intern of Xilinx University Program department   Shanghai
- Explore hardware-accelerated video processing and real-time processing on Xilinx Zynq FPGAs.

PUBLICATIONS

- Hongshi Tan, **Xinyu Chen**, Yao Chen, Bingsheng He, and Weng-Fai Wong. "LightRW: FPGA Accelerated Graph Dynamic Random Walks" The ACM Special Interest Group on Management of Data (**SIGMOD**), 2023. (PDF link)
- **Xinyu Chen**, Feng Cheng, Hongshi Tan, Yao Chen, Bingsheng He, and Weng-Fai Wong. " ReGraph: Scaling Graph Processing on HBM-enabled FPGAs with Heterogeneous Pipelines " The International Symposium on Microarchitecture (**MICRO**), 2022. (PDF link)

- **Xinyu Chen**, Feng Cheng, Hongshi Tan, Yao Chen, Bingsheng He, Weng-Fai Wong and Deming Chen. " ThunderGP: Resource-Efficient Graph Processing Framework on FPGAs with HLS "ACM Transactions on Reconfigurable Technology and Systems (**TRETS**), 2022. (PDF link)
- Hongshi Tan, **Xinyu Chen**, Yao Chen, Bingsheng He, Weng-Fai Wong and Deming Chen. " ThundeRiNG: Generating Multiple Independent Random Number Sequences on FPGAs" The International Conference on Supercomputing (**ICS**), 2021. (PDF link)
- **Xinyu Chen**, Hongshi Tan, Yao Chen, Bingsheng He, Weng-Fai Wong and Deming Chen. " Skew-Oblivious Data Routing for Data-Intensive Applications on FPGAs with HLS" The 58th Design Automation Conference (**DAC**), 2021. (PDF link)
- **Xinyu Chen**, Hongshi Tan, Yao Chen, Bingsheng He, Weng-Fai Wong and Deming Chen. "ThunderGP: HLS-based graph processing framework on FPGAs" The International Symposium on Field-Programmable Gate Arrays (**FPGA**), 2021. (PDF link)
- **Xinyu Chen**, Yao Chen, Ronak Bajaj, Jiong He, Bingsheng He, Weng-Fai Wong and Deming Chen. "Is FPGA useful for hash joins?" The International Conference on Innovative Data Systems Research (**CIDR**), 2020. (PDF link)
- Husong Liu, Shengliang Lu, **Xinyu Chen**, and Bingsheng He. "G 3: When Graph Neural Networks Meet Parallel Graph Processing Systems on GPUs." The International Conference on Very Large Data Bases (**VLDB**), 2020. (PDF link)
- **Xinyu Chen**, Ronak Bajaj, Yao Chen, Jiong He, Bingsheng He, Weng-Fai Wong, and Deming Chen. "On-The-Fly Parallel Data Shuffling for Graph Processing on OpenCL-based FPGAs." The International Conference on Field Programmable Logic and Applications (**FPL**), 2019. (PDF link)
- Cheng Liu, **Xinyu Chen**, Bingsheng He, Xiaofei Liao, Ying Wang, and Lei Zhang. "OBFS: OpenCL Based BFS Optimizations on Software Programmable FPGAs." The International Conference on Field-Programmable Technology (**FPT**), 2019. (PDF link)
- Xuntao Cheng, Bingsheng He, Eric Lo, Wei Wang, Shengliang Lu, and **Xinyu Chen**. "Deploying Hash Tables on Die-Stacked High Bandwidth Memory." The International Conference on Information and Knowledge Management (**CIKM**), 2019. (PDF link)
- Chuang-Yi Gui, Long Zheng, Bingsheng He, Cheng Liu, **Xinyu Chen**, Xiao-Fei Liao, and Hai Jin. "A survey on graph processing accelerators: Challenges and opportunities." Journal of Computer Science and Technology, 2019. (PDF link)

TEACHING EXPERIENCE

- Teaching Assistant of CS4225: Big Data Systems for Data Science (NUS, 2020 Spring)
- Teaching Assistant of CG2271: Real-time Operating System (NUS, 2018 Spring and 2018 Fall)
- Teaching Assistant of CG2271: Real-time Operating System (NUS, 2019 Fall)
- Teaching Assistant of IT1001: Introduction to Computing (NUS, 2019 Fall)

ACADEMIC SERVICES

- Program Committee of IEEE Transactions on Knowledge and Data Engineering (TKDE) poster session
- Reviewer of ACM Transactions on Reconfigurable Technology and Systems (TRETS)
- Program Committee of Distributed and Parallel Databases (DAPD) SI
- Reviewer of IEEE Transactions on Knowledge and Data Engineering (TKDE)
- Reviewer of Information Sciences
- Reviewer of IEEE International Conference on Distributed Computing Systems (ICDCS)

- Reviewer of IEEE/ACM International Symposium on Cluster, Cloud and Internet Computing (CCGrid)

HONORS & AWARDS

2023 Outstanding Researcher Awards   issued by AMD-Xilinx
2021 Research Achievement Award   issued by NUS
2020 Adaptive Computing Contest, 3rd Place   issued by AMD-Xilinx
2020 Research Achievement Award   issued by NUS
2017 Research Scholarship   issued by NUS
2016 Honor Graduation of Harbin Institute of Technology   issued by HIT
2013 National Scholarship (Top 2%)   issued by Ministry of Education
2013 National Electronics Design Contest (2nd Prize)   issued by Ministry of Education

INVITED TALKS

2023 Seminar at the Hong Kong University of Science and Technology (Guangzhou)
2022 China National Computer Congress
2021 The Xilinx Adaptive Compute Clusters (XACC) Technique Talk
2021 Xilinx University Program Winter Camp invited talk
2021 Invited talk at Georgia Tech seminar

SIDE PROJECTS

- Point-Clouds based 3D-Object-Detection on PYNQ-DPU (project link)
- ThunderGP: HLS-based Graph Processing Framework on FPGAs (project link)
- An AI-driven Search-by-Image Engine on KV260 (project link)