REN Yanyu

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Education

Bengbu No.2 High School (High School Degree) 2016.7 - 2019.6

- The first prize of the National Olympiad in Informatics in Provinces (NOIP2017)
- The third prize of the NOI2018 Winter Camps
- The provincial second prize of the Chinese High School Mathematics League

Tsinghua University (Undergraduate) GPA:3.86/4.00(40/207) 2019.7 – Present

- Major in Computer Science and Technology & minor in Economy and Finance
- Get A+ in *Student Research Training: The system scheduling for HPC/AI applications on high-performance clusters*
- Get A+ in *Introduction to High Performance Computing, Foundation of Object-Oriented Programming* and *Fundamentals of Programming, Programming and Training*
- The second prize of the Chinese Mathematics Competitions (CMC)

Cornell University (Exchange) 2022.1 – 2022.5

- Intern in Zhiru Zhang's lab
- Get A+ in Cryptography for a grade over 100 even among graduates

Research Experience

I am now interning in the PACMAN group of Tsinghua University. My mentor is Prof. Zhai Jidong.

PolyNAS: A Polyhedral Representation Support Network Architecture Search

IEEE TPDS (on submission) The second author

Together with my colleagues, we implemented PolyNAS, which simultaneously uses multiple nodes to generate candidate networks in parallel to overcome the scalability bottleneck of the former state-of-the-art methods. I took part in parallelizing the distance computation and applying the optimized code to the SenseTime cloud cluster.

COLAB-G: A GPU-Aware Collaborative Scheduling Framework for Heterogeneous Systems

A school-enterprise cooperation project with Alibaba Inc.

Alibaba is an IT giant in China. Its cloud machines locate in many places including Beijing, Shanghai, Guangzhou and Shenzhen. We attempted to accelerate the execution of some classic workloads on their cloud clusters by combining computing-intensive and memory-intensive to maximize the utilization of bandwidth and SMs.

Expansion upon *HyQuas: Hybrid Partitioner Based Quantum Circuit Simulation System on GPU*

HyQuas, focusing on quantum simulation, received the Best Student Paper Award in ICS21. We are now trying to expand this work by improving parallelism and adding collapse function.

PGGB-GPU: the Pangenome Graph Builder implemented on GPU

PGGB, a collection of software implemented on CPU to paint pangenome graph given the sequences of different species or individuals. I am now cooperating with Prof. Zhiru Zhang in Cornell University to implement PGGB on GPU to accelerate the execution speed of the point locating process.

Awards & Community Involvement

- Member of the Tsinghua Student Supercomputing Team
  We are the overall winner of the SC21 Student Cluster Competition.
  My duty application Cardioid, a cardiac modeling application, gets 19.8 out of 20

- The Academic Excellence Award for the 2019-2020 academic year
- The Outstanding Social Practice Award for the 2019-2020 academic year
- The Comprehensive Excellence Award for the 2020-2021 academic year
- Co-founder of the Student Writing Association of the Tsinghua University
- Writing Assistant (TA of the Freshman Writing Course)
- A three-star volunteer of the Tsinghua Redbud Volunteer Team

Skills

Algorithm & Data Structures, HPC, Network;

C/C++, Python, Java, Javascript, MATLAB, VHDL, Verilog/ SystemVerilog, OpenMP, MPI, CUDA