

Kuangyu Chen | Curriculum Vitae

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<https://chenkyChris.github.io>

RESEARCH INTERESTS

- **Interests:** Computer Architecture, Hardware Acceleration, Database Systems, Distributed Systems, Quantum Computing.
- **Current Research:** Focuses on optimizing the cardinality estimation process of query optimizers in database systems with neural subgraph isomorphism counting technology.

EDUCATION BACKGROUND

Renmin University of China (RUC), Beijing, China

09/2020-06/2024

- Bachelor of Engineering in Computer Science, Member of Turing Experimental Class of School of Information, RUC
- GPA: **3.68/4.00 (88/100)**

PUBLICATION

- **[ICDE'23]** “EdgeNN: Efficient Neural Network Inference for CPU-GPU Integrated Edge Devices”
Chenyang Zhang, Feng Zhang, **Kuangyu Chen**, Mingjun Chen, Bingsheng He, Xiaoyong Du; 2023 39th IEEE International Conference on Data Engineering (ICDE).
- **[TPDS (Submitted)]** “Breaking the Edge: Enabling Efficient Neural Network Inference on Integrated Edge Devices”
Chenyang Zhang, Feng Zhang, Qiangjun Zhou, **Kuangyu Chen**, Hechen Zhang, Bingsheng He, Jidong Zhai, and Xiaoyong Du; IEEE Transactions on Parallel and Distributed Systems (TPDS).

RESEARCH EXPERIENCE

EdgeNN: Efficient Neural Network Inference for CPU-GPU Integrated Edge Devices

07/2021-10/2022

Research Assistant, Key Laboratory of Data Engineering and Knowledge Engineering, RUC

Supervisors: Prof. Feng Zhang, and Prof. Xiaoyong Du

- Proposed EdgeNN, the first neural network inference solution on CPU-GPU integrated edge devices.
- Utilized CUDA unified memory to conduct zero-copy optimization, and implemented CPUGPU hybrid execution and fine-grained adaptive inference tuning approach to accelerate inference.
- Evaluated EdgeNN on four platforms varying in architecture, confirming its considerable advantages in performance speedup and energy efficiency.

Breaking the Edge: Enabling Efficient Neural Network Inference on Integrated Edge Devices

01/2023-04/2023

Research Assistant, Key Laboratory of Data Engineering and Knowledge Engineering, RUC

Supervisors: Prof. Feng Zhang, and Prof. Xiaoyong Du

- Based on EdgeNN, conducted new experiments concerning Augment Reality (AR) and Virtual Reality (VR), which are prevalent on edge devices.
- Evaluated EdgeNN on an additional platform, namely NVIDIA Jetson AGX Orin, finding that new platform brings higher performance speedup.

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COURSE PROJECTS

RUC-Base: Database Project (Grade: 94/100) 04/2023-Present

- Implemented ARIES database log recovery algorithm on "RUC-base" code framework, which will serve as the problems of the "2023 Computer System Development Capability Competition-Database System Kernel Designing Competition" (competition not started).

TEACHING ASSISTANT

Teaching Assistant, Introductory Programming II (Honors Course, Grade: 90/100) 03/2022-07/2022

Supervisor: Prof. Yahui Sun (30+ Undergraduates)

- Led weekly computer lab exercises and designed the course project;
- Responsible for Q&A on the assigned programming exercises.

ACADEMIC CONTESTS

Meritorious Winner, 2021 Mathematical Contest in Modeling (MCM) 03/2021

- Implemented image processing algorithm based on OpenCV, which featurized Hornet pictures for classification by species.

Provincial First Prize, Contemporary Undergraduate Mathematical Contest in Modeling (CUMCM) 09/2021

- Implemented particle swarm optimization to optimize factors to make reflectors as close as possible to the ideal paraboloid.

MEMBERSHIP

Volunteer, 2021 "Fellow Students Are Coming" Programme 06/2021

- Accompanied student recruitment committee and did logistics for admission consulting for fresh high school graduates.

Member of Department of Technology, School Association for Computers 09/2020-12/2020

- Repaired laptops for schoolmates and popularized basics of computers weekly;

Member, School Association for Mathematical Modeling 09/2020-12/2020

- Participated in advertising a lecture on the 2021 Mathematical Contest in Modeling.
- Organized a seminar on cryptography.

Member, School of Information Badminton Team 09/2020-Present

- Attended the school badminton competition representing the School of Information.
- Play badminton 4-6 hours per week, including 2 hours of weekly training.

PROFESSIONAL SKILLS

- *Specialties:* Database Systems, Parallel Computing, CPU-GPU Integrated Architectures, Distributed Systems.
- *Programming Language:* C++, Go, Python, CUDA, Verilog, SQL.
- *Platform & Software Operation System:* Vscode, Anaconda, Linux