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 CPU-GPU 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 (Honors Course, Grade: 94/100) 04/2023-Present

- Implemented basic functions, including storage control, B-link tree index, query execution, and transaction processing based on "RUC-base" code framework (https://github.com/ruc-deke/rucbase-lab/).

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.

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