Yuanhang Gao(高源航)

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Personal Information

- PhD candidate in NUDT, supervised by Prof. Xiangrui Yang and Dongsheng Li. Received the master's degree in cyberspace security from the National University of Defense Technology (NUDT), in Jun 2025.
- Interest: **System and networking, system for AI.**

Education

National University of Defense Technology	Changsha	Master	2022.9 ~ 2025.6
Zhengzhou University	Zhengzhou	Bachelor	2018.9 ~ 2022.7

Research & Competitions

Magneto: Load-Balanced Key-Value Service for Write-Intensive Workloads 2023.10 ~ 2024.7

Research Project, Project Leader

- Designed a write-buffering module on the data plane of in-network switches to address load imbalance caused by write-intensive workloads. By delaying write operations and merging multiple writes to the same key, the system effectively balances backend server loads. Developed a fault-tolerance mechanism to ensure service availability and data recoverability under extreme conditions.
- Outcomes: 1 paper accepted at **TSC (CCF-A)**, first author; 1 paper accepted at ISPA (CCF-C), first author.

CAInNet: A In-Network Computing Platform for AI Acceleration 2023.6 ~ 2023.8

Future Network Technology Innovation Competition

- Designed a platform based on FPGA-implemented PISA (Protocol-Independent Switch Architecture) to reduce data movement and enable pipelined processing of data and packets along the transmission path. Refactored the PISA architecture to support SIMD and MIMD modes, integrated AI computing units and parameter configuration modules. Each pipeline stage performs one layer of neural network computation; combined stages complete inference.

A Reconfigurable Action Execution Engine Supporting RMT and Its Execution Method 2022.9 ~ 2023.4

Invention Patent

- Proposed an action execution engine supporting Reconfigurable Match Tables (RMT) to address limitations in instruction types, interconnection efficiency, and virtual network isolation in existing technologies. Aims to meet the demand for higher frequency and complexity in packet processing.

Honors & Awards

- Excellent Student Scholarship, NUDT – Oct 2023
- Future Network Technology Innovation Competition – National Grand Prize – Aug 2023
- Outstanding New Student Scholarship, NUDT – Oct 2022
- "Three Good Student" Award, Zhengzhou University – Dec 2019