

Wenhao Sun

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Researching Experience

Benchmarking real time workload on advance processors Nov 2024 – Now

- Goal: Comprehensive workload analysis helps designers optimize system performance, resource allocation, and ensure application requirements are met.
- Method: Analyzing the execution behavior and influence of real-time tasks on advanced processor features (OoO, BP and LLC)

Efficient Robotics Computing System Nov 2023 – Nov 2024

- Designed a comprehensive perception-judgment-decision-execution pipeline for embodied robots and conducted experiments in both simulation and open real-world environments.
- Achieved robust close-loop task completion success rates on par with SOTA methods while reducing computational cost by 6.6x.

Optimize Real-Time Embedding System For Embodied AI Jan 2023 – Nov 2023

- Enhanced Linux to support both real-time and non-real-time capabilities, enabling motion control in the real-time domain and AI model inference in the non-real-time domain without interference.
- Successfully tested with 128 industrial servo motors under 4000 ms EtherCAT cycle, maintaining embedding system jitter within 50 μ s

Researching Interest

Embodied AI System Hardware-Software Co-Design

- Hardware: Efficient and real-time hardware with Embodied AI application.
- Algorithm: Efficient Embodied Robotics computing pipeline enable robot thinking easily.
- Software: Real-time OS and toolchain friendly for robotics, controlling, and Embodied AI system.

Education

Institute of Computing Technology, Chinese Academy of Sciences (ICT, CAS) Sep 2023 – Now
MS in Computer Science

- GPA: 3.8/4.0 Ranking: 5% (Estimated)
- Advisor: [Prof. Yinhe Han](#) and [Dr. Yiming Gan](#)

Hefei University of Technology (HFUT) Sep 2019 – June 2023
BS in Survey and Mapping

- GPA: 3.5/4.3 Ranking: 3/37 (Obtain the guaranteed admission)
- Advisor: Assoc. Prof. Chunju Zhang

Publications

DaDu-E: Rethinking the Role of Large Language Model in Robotic Computing Pipeline *Submitted Dec 2024*
(Submitted to Journal of Field Robotics, JFR)

Wenhao Sun, Sai Hou, Zixuan Wang, Bo Yu, Shaoshan Liu, Xu Yang, Shuai Liang, Yiming Gan, Yinhe Han
[Paper](#) [Demo](#)

Aphelios: A Selective Lock-step Neural Processing Unit Design *Accepted Apr 2025*
(The 35th edition of ACM/IEEE Great Lakes Symposium on VLSI, GLSVLSI 2025)
Best Paper Award Nominee

Wenhao Sun, Yiming Gan, Yuhui Hao, Yinhe Han

Investigating Performance and Real-Time Trade-offs in Out-of-Order Processors *Accepted May 2025*
(Workshop of 2025 International Symposium on Computer Architecture, ISCA 2025 workshop)
Wenhao Sun, Yuhui Hao, Yiyang Huang

KARMA: Augmenting Embodied AI Agents with Long-and-short Term Memory Systems

Accepted Feb 2025

(2025 IEEE International Conference on Robotics & Automation, ICRA 2025)

Zixuan Wang, Bo Yu, Junzhe Zhao, Wenhao Sun, Sai Hou, Shuai Liang, Xing Hu, Yinhe Han, Yiming Gan

[Paper](#)  [Demo](#)

Internship

Embedded Software and Operating System Engineer, [Sinsegye](#)

Feb 2023 – Aug 2023

- Optimized Linux real-time performance on diverse kinds of CPU/GPU.
- Tested performance of servos, PLC controllers and kinds of hardware devices.
- Adapting Cambrion NPU on the real-time embedding system.

Technologies

Languages: Python, C/C++, Verilog, Shell, ST, SQL

System: Gem5, ROS, RTOS

Tools: Gazebo, Moveit, GDB, AI4EDA, Robot and Servo Motor hardware debugging

English Ability: TOEFL(103, 2022)

Awards

2023 Outstanding Graduates of Anhui Province (Top 3%)

2023 Postgraduate Scholarships of UCAS

2024 Postgraduate Scholarships of UCAS