Wenhao Sun

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Researching Experience

Benchmarking real time workload on advanced out of order 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 (ROB, BP, MT and L3 Cache)

Efficient Embodied AI System — Nov 2023 – Nov 2024

- Designed a comprehensive perception-judgment-decision-execution pipeline for embodied intelligence 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 μs

Researching Interest

Embodied AI System Hardware-Software Co-Design

- Hardware: Efficent and real-time hardware with Embodied AI application.
- Algorithm: Efficent Embodied AI 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 Uniersity 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 to Journal of Field Robotics, JFR)

<u>Wenhao Sun</u>, Sai Hou, Zixuan Wang, Bo Yu, Shaoshan Liu, Xu Yang, Shuai Liang, Yiming Gan, Yinhe Han

Paper ▶ Demo

KARMA: Augmenting Embodied AI Agents with Long-and-short Term Memory Systems
(Accepted by 2025 IEEE International Conference on Robotics Automation, ICRA 2025)

Zixuan Wang, Bo Yu, Junzhe Zhao, <u>Wenhao Sun</u>, 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 HDL, Shell, ST, SQL

System: Linux, ROS, Gem5, Xenomai

Tools: Gazebo, Moveit, Open-source EDA, WebGIS, Robot and Servo Motor hardware debugging

English Ability: TOEFL(103)

Awards

2023 Outstanding Graduates of Anhui Province (Top 3%)

2023 Postgraduate Scholarships of UCAS

2024 Postgraduate Scholarships of UCAS