Shaolong Li

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EDUCATION

Central South University (CSU)   Sept. 2020 – Jun. 2024 (Expected)
B.Eng. in Computer Science and Technology
- **GPA:** 93.52 / 100
- **Ranking:** 2 / 238 (1st in major during Freshman, Sophomore, and Senior years)

PUBLICATION

Mixed Sparsity Training: Achieving 4× FLOP Reduction for LLMs Pretraining
Pihe Hu*, **Shaolong Li***, and Longbo Huang
Under review for *International Conference on Machine Learning* (ICML), Feb. 2024

MAST: A Sparse Training Framework for Multi-Agent Reinforcement Learning
Pihe Hu*, **Shaolong Li***, Ling Pan, and Longbo Huang
Under review for *International Conference on Machine Learning* (ICML), Feb. 2024

RESEARCH EXPERIENCE

Research on Sparse Pretraining for Large Language Models   Nov. 2023 – Feb. 2024
Advisor: Prof. Longbo Huang, Decision Intelligence Lab at Tsinghua University
- Introduced an innovative pretraining method that cuts down about 75% of Floating Point Operations (FLOPs) while preserving the LLMs' performance.
- Integrated dynamic sparse training and hybrid sparse attention with a sparsity variation pattern.
- Proposed a novel topology evolution scheme, Mixed-Growing, which allows for a discrepancy between the number of pruned and grown links.

Research on Sparse Training for Multi-agent Reinforcement Learning   Jul. 2023 – Sept. 2023
Advisor: Prof. Longbo Huang, Decision Intelligence Lab at Tsinghua University
- Introduced an innovative Multi-Agent Sparse Training Framework that translates Floating Point Operations into up to 20-fold reduction for both training and inference, accompanied by a commensurate level of model compression, all achieved with less than 3% performance degradation.
- Capitalized on gradient-based topology evolution combined with a novel Hybrid TD(λ) scheme to enhance the reliability of TD targets in sparse networks.
- Employed the Dual Buffers in data sampling to improve policy stability. Used the Soft Mellowmax operator as a substitute for the max operator to alleviate overestimation from DQN and achieve more accurate value estimation.

Research on Cybercrime Dataset   Oct. 2022 – Dec. 2022
Advisor: Prof. Ying Zhao, Visualization and Visual Analysis Research Group at CSU
- Introduced an open Cyber Asset Graph(CAG) dataset that comprises numerous CAGs of real-world cybercrime groups, which is the first open dataset for research in the field of cybercrime.
- Employed D3.js to visualize an open cyber asset graph dataset, programmed interactive functionalities using JavaScript including the visibility of asset chains and graph nodes.

SKILLS

- **Language:** English, Chinese.
- **Programming:** Python, Pytorch, C, C++, Java, MATLAB, HTML/CSS/Javascript, Shell, TEX.
- **Toolsets:** Git, Linux.

AWARDS AND SCHOLARSHIPS

○ Outstanding Graduate, CSU   Mar. 2024
○ "Ruiwei" Scholarship   Oct. 2023
○ Outstanding Student, CSU   Dec. 2022
○ "Yihao Foodstuff" Scholarship   Nov. 2022
○ Outstanding Student, CSU   Dec. 2021
○ National Scholarship   Dec. 2021
○ First Class Scholarship, CSU   Nov. 2021