

Yuhui Wang

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Education

Aug. 2021 – July. 2024	Master in Computer Science (Transferred from PhD Program), National University of Singapore
Sept. 2015 – June. 2020	Bachelor in Computer Science, Honours Program, Xi'an Jiaotong University
Jan. 2019 – Dec. 2019	Exchange Student, University of California, Berkeley

Interests

Game Developing, Game Engine, Optimization and Algorithm

Honors & Awards

Dec. 2017	Second Place in Microsoft Hackathon, Xi'an Site
Oct. 2017	The China Computer Federation (CCF) Elite Collegiate Award (0.2%)
Aug. 2017	Best Game in 2D Game Engine Class, National University of Singapore
June. 2017	First Prize in The Mathematical Contest in Modeling, Xi'an Jiaotong University
Mar. 2017	First Prize in Chinese Colleges Computer Competition (CCCC) - Group Programming Ladder Tournament - Northwest Division
Dec. 2016	Silver Medal in the ACM-ICPC Asia Regional Contest China-Final 2016
Dec. 2016	First Prize of Shidi Lu Scholarship (0.5%)
Oct. 2016	Bronze Medal in the ACM-ICPC Asia Regional Contest Dailan Site 2016
July. 2016	First Prize in Chinese Colleges Computer Competition (CCCC) - Group Programming Ladder Tournament
May. 2016	Golden Medal in the 2016 ACM-ICPC China Shaanxi Provincial Programming Contest
July. 2013	Bronze Medal in the National Olympiad in Informatics (NOI 2013)

Research & Work Experience

Dec. 2020– Aug. 2021	Research Assist in High Performance Computing for Artificial Intelligence Lab , National University of Singapore Mentored by Prof. Yang You . Accelerating neural network training by utilizing data parallelism, contributions included: <ul style="list-style-type: none">– Improving network performance under extremely huge data batches while reducing training time. The work is uploaded on Arxiv.– Investigating popular large batch training strategies and their combinations
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May. 2019– Dec. 2019 Research Assist in [Berkeley Benchmarking and Optimization Group](#), **University of California, Berkeley**

Mentored by Grace Dinh and [James Demmel](#).

Reducing the communication cost of convolutional neural network, contributions included:

- Designing the state-of-the-art [Communication Avoiding CNN algorithm](#) and testing the practical performance based on simulated caches. Combining theoretical analyses and experiment results, the work is published on [MDS20](#)
- Improving existing communication lower bounds for convolutional neural networks by a constant factor.
- Analyzing the way cache line size affects practical communication costs.

July. 2017– Aug. 2017 Summer Student in 2D Game Engine Class, National University of Singapore.

Mentored by [Kelvin Sung](#)

Learning and implementing a 2D game engine with HTML, WebGL and JavaScript. Works included:

- Implementing Shader and drawing objects.
- Implementing game loop and loading resource files asynchronously.
- Implementing physics and detecting collisions.
- Implementing illumination and shadow.
- Building a [2D game](#), voted the best game over the class.

Nov. 2015 – Sept. 2016 Software Development Intern in **Ministry of Education Key Lab For Intelligent Networks and Network Security**

Mentored by [Chenxu Wang](#).

As a main developer of a [music game](#) with C#, duties included:

- Extracting music tracks from audio files
- Designing and implementing several game modes
- Implementing animations
- Mapping piano keys to a computer and letting the user play our game via a real piano.

The game is exhibited in the China Science and Technology Museum and attracts many teenagers.

Publications

- Joya Chen , Kai Xu, **Yuhui Wang**, Yifei Cheng, Angela Yao. DropIT: Dropping Intermediate Tensors for Memory-Efficient DNN Training, ICLR2023
- Yang You, **Yuhui Wang**, Huan Zhang, Zhao Zhang, James Demmel, Cho-Jui Hsieh. The Limit of the Batch Size, arXiv preprint arXiv:2006.08517 (2020).
- Yang You, Jing Li, Sashank Reddi, **Yuhui Wang**, Jonathan Hseu, Sanjiv Kumar, Srinadh Bhojanapalli, Xiaodan Song, James Demmel, Kurt Keutzer, Cho-Jui Hsieh. Reducing BERT Pre-Training Time from 3 Days to 76 Minutes, submitted to JMLR.
- James Demmel, Grace Dinh, Ed Younis, **Yuhui Wang**. Communication-Optimal Convolutional Neural Nets, SIAM MDS2020

Misc.

- Translator of the following video games: CardSurvival: Tropical Island, Monster Frontier, Alone: ZombieWoods
- Marathon Runner. Completed 42km running several times.