

Chuanrui WANG

G947 New Main Building – Beihang University – Beijing, China

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Education

M.Sc. in System Engineering

Beijing, China

Aug. 2019 - Jun. 2022

- Beihang University
- Overall GPA: 3.64/4.0

Ingénieur Généraliste

Lille, France

Aug. 2018 - Jun. 2020

- École Centrale de Lille, Dual Degree Program
- Overall GPA: 3.70/4.0

B.Sc. in Mathematics and Applied Mathematics

Beijing, China

Aug. 2015 - Jun. 2019

- Beihang University, Entrance Age: 14
- Overall GPA: 3.6/4.0, Rank: 8/120; Major Courses GPA: 3.77/4.0, Rank: 2/120

Selective Courses

- in Maths: Mathematical Analysis / Linear Algebra / Abstract Algebra / Geometry / Measure Theory / Differential Equations / Probability / Mathematical Statistics / Wavelet Transforms
- in CS: Data Structure / Advanced Algorithm Design / C Programming Language / Systems and Networks / Software Engineering / Collaborative Intelligence / Information Systems

Publications

A New Mesh Smoothing Method based on A Neural Network

- Yufei Guo, Chuanrui Wang, Zhe Ma, Xuhui Huang, Kewu Sun, Rongli Zhao
- In *Computational Mechanics*(Journal) **Comput Mech**(2021).

Colossal-AI: A Unified Deep Learning System for Large-Scale Parallel Training

- Zhengda Bian, Hongxin Liu, Boxiang Wang, Haichen Huang, Yongbin Li, Chuanrui Wang, Fan Cui, Yang You
- In *arXiv preprint arXiv:2110.14883*. (900+ stars on [GitHub](#))

Hierarchical Lexicon Embedding Architecture for Chinese Named Entity Recognition

- Jiahao Hu, Yuanxin Ouyang, Chen Li, Chuanrui Wang, Wenge Rong, Zhang Xiong.
- In *Proceedings of the 30th International Conference on Artificial Neural Networks ICANN 2021*.

Prospective Research Interests

- My current research mainly focuses on **Natural Language Processing**, especially on knowledge graph embedding, retrieval QA and conversational AI.
- I am prospectively interested in **Graph Representation Learning** and **Large Scale Optimization**, and further conduct researches on the listed topics: knowledge graph construction, knowledge graph reasoning, drug discovery and protein structure prediction.

Research Experiences

Research in Natural Language Processing and Pre-trained Language Models

Advisor: Wenge RONG, Professor, Beihang University

Nov. 2020 - Present

- Proposed a Hierarchical Lexicon Embedding Structure to better solve Chinese named entity recognition (NER) task and outperformed baselines in three commonly used Chinese NER dataset (MSRA, Resume and Weibo)
- Proposed a Question Answer System that fuses Knowledge Graph information using an attention-based filter mechanism, thus to generate/retrieve contextualized natural languages with more details.

Large-Scale Model Training System with Efficient Parallelization Techniques

Advisor: Yang YOU, Professor, National University of Singapore

Aug. 2021 - Feb. 2022

- Developed a distributed machine learning framework [Colossal-AI](#) that combines hybrid parallel training methods, aiming to support the AI community to write distributed models in a traditional format.
- Realized the 1d tensor parallel architecture and Conducted scaling experiments and convergence experiments.
- Successfully pre-trained a ViT-base/32 model within 0.6 hour.

Straightforward Neural Network Method for Mesh Smoothing

Advisor: Yufei GUO, PhD Researcher, X Lab

Sep. 2020 - Nov. 2020

- Mesh smoothing, an important technique used in physics and computer graphics to improve mesh quality, should be performed fast enough to enable real-time adjustment of parameters.
- Proposed a neural network structure to imitate optimization-based smoothing methods which is time consuming; it is the first deep learning approach that solves mesh smoothing problem.
- Achieved efficiency four times faster than traditional optimization-based methods while being comparable in terms of mesh quality.

Project Experiences

Edge Video Intelligence Platform

R&D Intern at Ainnovation, Beijing

Jul. 2020 - Sep. 2020

- Built an [Intelligent Edge Video Platform](#) providing real-time functional interfaces that are adaptable to various commercial applications in terms of model development and hardware compatibility.
- Developed and encapsulated core functions of the platform including video/photo encoding, decoding, cropping, augmenting, etc. on Huawei HiSilicon chip (C++).
- Trained and deployed two sub-applications on the platform: online face recognition system and kitchen monitoring system.

Drone for Measuring Environmental Data

Project with BL evolution, Lille

Dec. 2018 - Feb. 2020

- Designed a drone that captures and analyzes various environmental data. ([Documentation](#))
- Conducted project establishment, budget estimation, schedule arrangement, and final product delivery.
- Assembled sensors on Raspberry Pi to monitor/record/store data.
- Processed the observed data and represented the analytical results on a map database.

Online Chinese Chess Game

WEB course's project, Lille

Jun. 2020 - Jun. 2020

- Created a web-based game application that allows multi-players to interact on live. ([Documentation](#))
- Defined the specifications of gameplay, functions, and main user interface.
- Realized both frontend and backend of the website including database, web page display, and game realization.

Honors and Awards

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|---|--------------|
| ◦ CSC scholarship | 2019-2020 |
| ◦ YUAN HANG scholarship, Beihang University | 2018 |
| ◦ Scholarship of Excellent Undergraduates, Beihang University | top 1%, 2018 |
| ◦ Second Prize, FENGRU Technology Competition, Beihang University | top 5%, 2015 |
| ◦ Outstanding Student Cadre, Beijing | top 1%, 2015 |

Skills

- **Computer Skills:** Python, C/C++, Java, SQL, php, XHTML, CSS, UML, Linux, Matlab, Catia, Office
- **English Skills:** IELTS: 7(L8.5, R8, W6.5, S6); GRE: V156, Q169, W3.0
- **Other Languages:** Mandarin: Native; French: DELF B2

Extracurricular Activities

- **Hobbies:** snowboard, tennis, football and swimming.
- **Volunteer teacher** in an orphanage at Yushu, Qinghai (a region suffered from a huge earthquake).