

Jiawei Wang

PHD CANDIDATE · UNIVERSITY OF SCIENCE AND TECHNOLOGY OF CHINA & MICROSOFT RESEARCH ASIA

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Education

School of the Gifted Young of USTC(University of Science and Technology of China)

Anhui, China

Bachelor of engineering in computer science and technology

Sept 2017 - June 2021

- Major GPA: 3.93/4.3
- Overall GPA: 3.8/4.3
- Core Courses Score: Linear Algebra B1: 95/100, Operation Research: 96/100, Compilers: 95/100, Artificial Intelligence: 95/100

School of Information Science and Technology of USTC

Beijing, China

PhD candidate in artificial intelligence

Sept 2021 - now

- Selected for Joint PhD program between USTC and MSRA.

Publications

JOURNAL ARTICLES

Group, Order, and Reconstruct: an End-to-End System for Hierarchical Document Structure Analysis

Jiawei Wang, Kai Hu, Zhuoyao Zhong, Lei Sun, Qiang Huo

Submitted to *Pattern Recognition* (2023). Elsevier, 2023

Robust Table Structure Recognition with Dynamic Queries Enhanced Detection Transformer

Jiawei Wang, Weihong Lin, Chixiang Ma, Mingze Li, Zheng Sun, Lei Sun, Qiang Huo

Pattern Recognition (2023). Elsevier, 2023

Physical mechanisms in impacts of interaction factors on totally asymmetric simple exclusion processes

Yuqing Wang, Jiawei Wang, Binghong Wang

International Journal of Modern Physics B 33.20 (2019) p. 1950217. World Scientific, 2019

Stochastic dynamics in nonequilibrium phase transitions of multiple totally asymmetric simple exclusion processes coupled with strong and weak interacting effects

Yuqing Wang, Jiawei Wang, Ziang Zhu, Binghong Wang

International Journal of Modern Physics B 33.20 (2019) p. 1950229. World Scientific, 2019

Evolution laws and stability analyses of traffic network constituted by changing ramps and main road

Yuqing Wang, Chaofan Zhou, Jiawei Wang, Xinpeng Ni

International Journal of Modern Physics B 33.20 (2019) p. 1950228. World Scientific, 2019

A macroscopic model for VOC emissions process complemented by real data

Yuqing Wang, Chaofan Zhou, Ziang Zhu, Jiawei Wang, Zimeng Wang, Chenhao Fang, Bin Jia

Modern Physics Letters B 32.19 (2018) p. 1850209. World Scientific, 2018

CONFERENCE PROCEEDINGS

DQ-DETR: Dynamic Queries Enhanced Detection Transformer for Arbitrary Shape Text Detection

Chixiang Ma, Lei Sun, Jiawei Wang, Qiang Huo

International Conference on Document Analysis and Recognition, 2023

A Hybrid Approach to Document Layout Analysis for Heterogeneous Document Images

Zhuoyao Zhong, Jiawei Wang, Haiqing Sun, Kai Hu, Erhan Zhang, Lei Sun, Qiang Huo

International Conference on Document Analysis and Recognition, 2023

TSRFormer: Table Structure Recognition with Transformers

Weihong Lin, Zheng Sun, Chixiang Ma, Mingze Li, Jiawei Wang, Lei Sun, Qiang Huo

Proceedings of the 30th ACM International Conference on Multimedia, 2022

Control Strategies for Reducing VOCs Emission Process Based on Empirical Data

Yuqing Wang, Jiawei Wang, Ziang Zhu, Chaofan Zhou, Yiyao Kou, Jing Sun, Zhengwei Mei, Ziwu Li, Peng Wu, Donghu Wang, Si Zhang, Wenli Zhang

2018 *IEEE International Conference on Mechatronics, Robotics and Automation (ICMRA)*, Best paper presentation award, 2018

Experiences

National Natural Science Lab: MOE Key Laboratory for Urban Transportation Complex

Hefei, China

Systems Theory and Technology

Student research assistant with Prof. Yuqing Wang

Sept 2017 - June 2020

- Constructed ASEP networks composed of two competitive random irregular networks with limited particle reservoir. Obtained mean-field solutions of characteristic order parameters of the proposed systems by using mean-field analyses and Monte-Carlo simulations.
- Constructed multi-lane TASEPs coupled with strong and weak coupling. Obtained new topology evolution law of phase diagrams, shock formation and evolution mechanism including bulk-induced shock, boundary-induced shock, hybrid shock formation etc. Provide theoretical bases and support for non-equilibrium phase transitions mechanism of multi-body particle systems.

Huawei 2012 Lab, Central Media Technology Institute

Hangzhou, China

Intern directed by senior engineer Liping Zhang and Dr. Jun Dai

Dec. 2019 - Sept 2020

- Focused on photo contrast migration. Studied how to use deep neural network for HDR image synthesis. Constructed an efficient model for image style transfer.

Microsoft Research Asia

Beijing, China

Intern directed by Prof. Qiang Huo and Dr. Lei Sun

Sept 2020 - Present

- Firstly applied DETR(DEtection TRansformer) to rotated object detection task. Explored the robustness of set prediction for rotated table detection. Constructed a rotate-free table detector that is being implemented as a product solution.
- Dived deep into DETR for different tasks. Proposed a Dynamic Queries based DETR, named DQ-DETR, that has been verified effective in Text Detection and Table Structure Recognition.
- Explored hierarchical document structure analysis. Proposed a three-stage framework and constructed a comprehensive benchmark.

Projects

Minipython

Anhui, China

CO-DEVELOPER

Dec. 2019

- Using **Lex**, **Yacc** and **C++** to implement an Interactive Mini-python which is similar to Cython.
- Implemented basic data types and basic operations including **String summation**.
- Implemented all operations of List in Python including differences of **Deep copy** and **Shallow copy**.

Multi-oriented Table Detector

Beijing, China

DEVELOPER

Dec. 2021 - June. 2022

- Explored different Approximate methods for SkewIoU loss and Implemented an **Accurate Differential GloU** manually.
- Dived deep into **Representation Ambiguity Problem** in rotated object detection and verified the effectiveness of **Set Prediction in DETR**.
- Constructed a multi-oriented table detector that is being implemented as a **product solution**.

Honors & Awards

2022	2nd Place, Panoptic Scene Graph Challenge @ ECCV 2022 SenseHuman Workshop , CNY 100,000 bonus	Guangzhou
2017-2021	Cyrus Tang Scholarship , Awarded to college students who are both good in academics and enthusiastic about social welfare	USTC
2021	Provincial excellent graduate , Awarded to excellent graduate	Anhui, China
2020	Outstanding Student Scholarship Gold Award , Awarded to students with excellent achievements in this year	USTC
2019	Tang Lixin Scholarship(Annual funding of CNY 10,000 until Ph.D.) , Awarded to students with excellent potential in academic, business or politics	USTC
2019	Suzhou Yucai Scholarship(Top 10 undergraduates per year) , Awarded to college students with outstanding comprehensive abilities	USTC
2018	Outstanding Student Scholarship Gold Award , Awarded to students with excellent achievements in this year	USTC
2018	First prize for freshman seminar papers , Awarded to freshman with excellent academic potentials	USTC

Interests

Guitar	Since 2017, I have been in love with Guitar and learned fingerstyle guitar with a teacher for two years.
Technical Writing	I write descriptive blogs about projects and papers. Some of them are on my homepage.
Football	Since I was in high school, I have loved playing football.