

PENGFEI ZHOU

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EDUCATION

Master of Engineering, major in Artificial Intelligence Key Lab of Intelligent Information Processing, Institute of Computing Technology Chinese Academy of Sciences, Beijing, China	Advisor: Prof. Weiqing Min and Prof. Shuqiang Jiang Graduating: Jul. 2024 GPA: 3.62/4
Bachelor of Engineering, major in Internet of Things Engineering College of Computer Science Zhejiang University of Technology, Hangzhou, China	Advisor: Prof. Cong Bai Graduated: Jun. 2021 Grade: 86.0/100 (<i>Ranking: 2/46</i>)

MAJOR AWARDS & HONORS

Top-tier Awards & Honors

- **National Scholarship** (*3/300+ in Group of Intelligence and 25/1K+ in ICT, CAS*) Dec. 2023
- **National Scholarship** (*5/1K+ in College of Computer Science and 50/4K+ in ZJUT*) Dec. 2020
- "Jianxing" Honors Student in Zhejiang University of Technology (*First Class Honors, 86/4K+ in ZJUT*) Jun. 2021
- Zhejiang Provincial Outstanding Graduate (*First Class Honors, 10K/300K+ in Zhejiang Province*) May 2021

International

- Silver Award in Zhejiang International "Internet+" Undergraduate Entrepreneurship Competition Sep. 2021
- Second Place in International Information Retrieval Competition of LMRT in ImageCLEF Lifelog 2019 Sep. 2019

National

- E-Funds Fintech Fellowship awarded by ICT, Chinese Academy of Sciences Jan. 2023
- Third Price in "Challenge Cup" National College Students Academic Competition Mar. 2022
- Outstanding and Honorary Student in College of Computer Science, ZJUT Sep. 2021
- Best Prize in ZJUT "Canal Cup" Academic Science and Technology Competition Dec. 2020
- Second Prize in National Service Outsourcing Competition Aug. 2020
- First Prize in East China Division in "HUAWEI Cup" National Undergraduate IoT Design Contest Aug. 2020

PUBLICATIONS

Published & Accepted

- **Pengfei Zhou**, Weiqing Min, Jiajun Song, Yang Zhang, and Shuqiang Jiang. 2023. Knowledge-Enhanced Features Synthesizer for Real-World Zero-Shot Food Detection. *IEEE Transactions on Image Processing (Top-tier Journal in Computer Vision, IF=10.6)*
- **Pengfei Zhou**, Weiqing Min, Yang Zhang, Jiajun Song, Ying Jin, and Shuqiang Jiang. 2023. SeeDS: Semantic Separable Diffusion Synthesizer for Zero-shot Food Detection. In *Proceedings of the 31st ACM International Conference on Multimedia (Top-tier Conference in Multimedia, 29.3% acceptance rate)*
- **Pengfei Zhou**, Kaining Ying, Zhenhua Wang, Dongyan Guo, and Cong Bai. 2022. Self-Supervised Enhancement for Named Entity Disambiguation via Multimodal Graph Convolution. *IEEE Transactions on Neural Networks and Learning Systems (JCR-Q1, Top Journal in Learning Systems, IF=10.4)*
- **Pengfei Zhou**, Cong Bai, Jie Xia, and Shengyong Chen. 2022. CMRDF: A Real-Time Food Alerting System Based on Multimodal Data. *IEEE Internet of Things Journal (JCR-Q1, Top Journal in IoT, IF=10.6)*
- **Pengfei Zhou**, Cong Bai, Kaining Ying, Jie Xia, and Lixin Huang. 2021. RWMF: A Real-World Multimodal Food-log Database. In *Proceedings of the 25th International Conference on Pattern Recognition (Grand Conference in Computer Vision)*
- Zhiwei Zha, **Pengfei Zhou**, and Cong Bai. 2022. Exploring Implicit and Explicit Relations with Dual Relation-Aware Network for Image Captioning. In *Proceedings of the 28th International Conference on Multimedia Modeling (Grand Conference in Multimedia)*
- Kaining Ying, Zhenhua Wang, Cong Bai, and **Pengfei Zhou**. 2022. ISDA: Position-Aware Instance Segmentation with Deformable Attention. In *Proceedings of the 47th IEEE International Conference on Acoustics, Speech and Signal Processing (Top-tier Conference in Signal Processing)*

Under Review

- Weiqing Min, **Pengfei Zhou**, Leyi Xu, Tao Liu, Tianhao Li, Mingyu Huang, Ying Jin, Yifan Yi, Min Wen, Shuqiang Jiang and Ramesh Jain. 2023. From Plate to Production: Artificial Intelligence in Modern Consumer-Driven Food Systems. Proceedings of the IEEE (*Top-tier Journal in Reviews*, IF=20.6)
- Qinshi Zhang, Latisha Besariani, Suifang Zhou, **Pengfei Zhou**, Jussi Holopainen, and RAY LC. 2023. Eternagram: Probing Player Attitudes Towards Climate Change Using a ChatGPT-driven Text-based Adventure, ACM Conference on Human Factors in Computing Systems (*Top-tier Conference in Human-Computer Interaction*)

Ongoing

- **Pengfei Zhou**, Weiqing Min, Chunlin Liu, Tao Liu, and Shuqiang Jiang. Large-Scale Open-World Food Detection. International Journal of Computer Vision *Top-tier Journal in Computer Vision*, IF=19.5)
- **Pengfei Zhou**, Kaining Ying, Weiqing Min, Hao Chen, Shuqiang Jiang, and Chunhua Shen. Instance-Aware Reasoning Segmentation via Large Language Model. European Conference on Computer Vision 2024 (*Top-tier Conference in Computer Vision*)

RESEARCH EXPERIENCE

Collaborator Working with Prof. Ramesh Jain

University of California, Irvine, CA, USA

Aug. 2023 – Present

- International collaborating with Prof. Ramesh Jain (*titled Father of Multimedia*) to boost intelligent health
- Researching modern consumer-driven food systems based on AI and relations with sustainability and health
- Organized literature research and discussion; Co-authored a paper submitted to Proceedings of the IEEE

Visiting Student Working with Prof. Hao Chen and Prof. Chunhua Shen

State Key Laboratory of CAD&CG, Zhejiang University, Hangzhou, China

Jun. 2023 – Present

- Researching Large Language Models under the National Key R&D Program of China (*No. 2022ZD0118700*)
- Addressing open-set problems via proposed instance-enhanced Multimodal Large Language Models
- Led the idea discussion, programming and experiment; Co-authored a paper to be submitted to ECCV 2024

HCIX Summer Program Student Worked with Prof. Ray LC

School of Creative Media, City University of Hong Kong, Hong Kong SAR

May 2023 – Sep. 2023

- Researched human-AI interaction applications using Large Language Models and Diffusion Models in HCI area
- Proposed a classifier-based trigger strategy in Eternagram (*1K+ views*), an educational game for climate change
- Led participant recruitment and data analysis; Co-authored a paper submitted to CHI 2024

Co-founder, CTO

Hangzhou Xiao Bin Technology Co. LTD, Hangzhou, China

Jan. 2020 – May 2021

- Director of Smart Home System Research and Development Laboratory with 10+ employees
- Developed a smart bin recognition system (*99%+ classification accuracy, 30%+ higher than competitors*)
- Sold products in major cities in China including Shanghai and Hangzhou, with an annual turnover of CNY 100K+
- Won 10+ prizes in competitions including Silver Award in Zhejiang International "Internet+" Undergraduate Entrepreneurship Competition (*2/120*) and First Prize in National Undergraduate IoT Design Contest (*5/100*)

Research Assistant Worked with Prof. Cong Bai

Institute of Computer Vision, Zhejiang University of Technology, Hangzhou, China

Apr. 2019 – Jun. 2021

- Researched multimodal retrieval supported by National Natural Science Fund of China Project (*No. 61976192*)
- Led a team of 5 researchers in the Undergraduate Innovation Entrepreneurship Training Program-funded project
- Won the second place (*2/10+*) in LMRT of ImageCLEFlog2019 Competition (*as the team leader*)
- Authored 5 published international papers, 3 Chinese patents (*granted*) and 2 software copyrights (*granted*)

PROJECTS

Vision-based Food System, Institute of Intelligent Computing Technology, CAS

Apr. 2022 – Oct. 2023

- Led a team of 8 employees at Algorithm Laboratory to research visual understanding and nutritional estimation

- Proposed food detection algorithm via zero-shot learning techniques with 99%+ accuracy in real-world scenarios
- Deployed dietary systems in Changzhou First People's Hospital, Puxiang Co. LTD and Xujiang Experimental Middle School with 100M+ usage, leading to a 3× checkout rate and 80% manpower requirement reduction
- Authorized a Chinese patent, published a paper in ACM MM 2023 and IEEE TIP

Online Illegal Information Monitoring System, Jiaxing Tobacco Monopoly Administration Jun. 2021 – Feb. 2022

- Led a team of 3 researchers to develop the core models in the online social media information monitoring system
- Proposed an entity recognition model with 95%+ accuracy in 1M+ data samples for tobacco information processing
- Published a paper as first-author in IEEE TNNLS and authorized three software copyrights
- Deployed practical systems for Jiaxing Tobacco Monopoly Administration, leading to two subsequent projects

FUNDED PROJECTS

- Led project of Research and Implementation of Cross-modal Retrieval for Lifelogs funded by Undergraduate Innovation & Entrepreneurship Training Program (10K CNY)
- Co-directed projects of Design and Development of Smart Classified Garbage Bin System based on Deep Learning and Establishment of a Model to Evaluate the Risk of Ruptured Intracranial Aneurysm funded by Zhejiang Xin Miao Talent Plan (30K CNY)
- Led projects of Cross-modal Retrieval based on Multimodal Diabetes Data and Cross-modal Hash Retrieval based on Deep Adversarial Network funded by ZJUT "Canal Cup" Academic Science and Technology Program (5K CNY)

ACADEMIC ACTIVITIES

Reviewer: IEEE TNNLS, IEEE TMM, ACM MM 2024/2023, ICMR 2023, ICME 2023/2022, ICPR 2022

Co-organizer: China Multimedia 2023 Conference (*1K+ attendees*): Website designer and system manager; Co-organizer of *AI4Food: Food and Health Computing Workshop*; Outstanding Volunteer Award

Conference Attendance: ACM MM 2023, IEEE ICPR 2021, ACM MM Asia 2019, CLEF 2019, etc.

SOCIAL ACTIVITIES

Student Service

- Campus ambassador of Tencent at ICT, CAS (*recommending fellow students to Tencent*)
- Deputy Director of External Relations Department of ZJUT College Student Union (*CNY 1M+ yearly sponsorship*)

Volunteer Service

- Conference volunteer in Alibaba Cloud Computing Conference 2018 (*1M+ attendees*)
- One-month volunteer teacher in Wangmo County, a rural area of Qianxi'nian Prefecture, Guizhou Province, 2018
- Care volunteer for autistic children in Hangzhou Carnation Children Rehabilitation Center, 2017

Interest Activities

- Won the second prize in the defense of the Student Union as a representative of the department, 2017
- Won excellent award in ZJUT "Fly Cup" English Speech Competitions; the second and third prizes in ZJUT Chinese Speech Competitions; the second prize in ZJUT Group Debate Competitions, 2017

Other Interests

- Participated in 2021 postgraduate recommendation summer camp of ICT, CAS, and obtained Excellent Camper
- Changed major (*previously studied civil engineering at Institute of Architectural Engineering, ZJUT*)

SKILLS

Language: English (98 TOEFL, and 7.0 IELTS), Chinese (*Native*)

Programming: Python (*Pytorch*), C++, C, MATLAB

RESEARCH INTERESTS

Current: Working on Computer Vision (*zero-shot detection*) and Multimedia Content Analysis (*food computing*)

Interested in: AI-enabled Healthcare, Open-world Applications, and Multimodal Large Language Models