ZHITAO CHENG

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EDUCATION

University of Electronic Science and Technology of China (UESTC) 09/2020-06/2024
B.S. in Data Science and Big Data Technology, B.Eng. in Computer Science and Technology
Overall GPA: 3.96/4.0, ranking 1/113
Related Courses: Mathematical Analysis, Advanced Algebra, Mathematics in Data Science, Data Mining and Big Data Analytics, Artificial Intelligence, Mathematical methods of artificial intelligence

SELECTED PUBLICATIONS

[1] Chenyan Jia, **Zhitao Cheng**, Yanlin Leng, Junfeng Wang, Yong Tang. MPRNet: Multi-scale Pointwise Regression Network for Crowd Counting and Localization. *2024 International Conference on Intelligent Computing Singapore*: Springer Nature Singapore, 2024: 180-191.

[2] Yao Xiao, **Zhitao Cheng**, Shengping Liu, Yicheng Zhang, He Tang, Yong Tang. PhotoSolver: A Bidirectional Photonic Solver for Systems of Linear Equations. *Optics and Lasers in Engineering, 2024, 183: 108524.*

[3] Yong Tang, Jason Xiong, **Zhitao Cheng**, Yan Zhuang, Kunqi Li, Jingcong Xie, Yi-Cheng Zhang. Looking into the Market Behaviors through the Lens of Correlations and Eigenvalues: An Investigation on the Chinese and US Markets Using RMT. *Entropy, 2023, 25, 1460.*

[4] Zongyao Zhao, Yong Tang, **Zhitao Cheng**, Yanlin Leng, LiLing Tang. ABL-TCM: An Abductive Framework for Named Entity Recognition in Traditional Chinese Medicine. *IEEE Access*, 2024.

[5] Yao Xiao, Yang Zhao, Wei Wang, **Zhitao Cheng**, Xizhu Peng, He Tang, Shengping Liu, Yong Tang. Residual Calibration for High-Precision Optical Neural Networks, Under Review, *Optica*, 2024. (Top Journal)

[6] **Zhitao Cheng**, Chenyan Jia, Xujia Li, Yuyang Zhuge, Yanlin Leng, Qing Wang, Song Su, Jiayu Huang, Yong Tang. Diagnosis of Cataract of Human-companion Animals using Deep Learning. Under Review, *Machine Vision and Applications* 2024.

[7] Li Wang*, **Zhitao Cheng***, Yan Zhuang, Kunqi Li, Fan Li, Song Su, Jian Shu, Jing Chen, Yong Tang. Early Assessment of Myocardial Injury in Patients with COVID-19 Using a Two-Stage Deep Learning Framework Based on Non-contrast Chest CT. Under Review, *Journal of Cardiovascular Computed Tomography*, 2024.

[8] Jiali Wu*, **Zhitao Cheng***, Junan Zhou, Kunqi Li, Piao Wang, Yan Zhuang, Jijun Lu, Linru Zhou, Fan Li, Song Su, Yong Tang. Accurate Identification of Intestinal Ischemic Areas Using Hyperspectral Imaging: A Pilot Study Based on Machine Learning and Deep Learning Models. Under Review, *Computers in Biology and Medicine*, 2024.

(* Co-first author)

RESEARCH

Light Sailor: An Laser-powered Spacecraft for Interplanetary Travelling (202210614179Y) 12/2021-10/2022
School Project | Mentor: Prof. Yong Tang

- Designed a lightsail spacecraft and utilized reinforcement learning to control its navigation trajectory and attitude
- Conducted simulation experiment in Python to test the spacecraft's performance

Intelligent Healthcare for Beijing 2022 Winter Olympics* 10/2020-12/2022
Entrepreneurial Project | Mentor: Prof. Yong Tang

- Constructed a **YOLO and Fast RCNN**-based posture detection model using **62** competition videos of athletes to detect falls and identify potential injuries, assisting in fast and effective medical treatment
- Achieved an accuracy of up to **96.77%** for fall detection and **91.94%** for injury classification

CompreHensive EvALuation of InTrinsic Capacity in CHina StudY (2023YFC3605202)* 10/2023-12/2028
National Project | Mentor: Prof. Junfeng Wang

- Research on the establishment and application of the evaluation system based on the aging rule of the elderly (Using time series analysis model (**LSTM, Transformer**) and **machine learning**)

Deep Learning-based Diagnosis of Extra-biliary Duct Cancer Diseases** 10/2021-12/2026
National Project | Mentor: M.D. Jian Su, Prof. Yong Tang

- Employed **ResNet, DenseNet, and UNet** for image lesion segmentation, disease type classification, and expression classification based on image data from CT and MRI scans and clinical feature data

Silicon-based Optoelectronic Chip System for Ultra-high-speed Matrix Multiplication** 10/2020-12/2025
Major Participant | Mentor: Prof. He Tang, Prof. Yong Tang

- Researched key technologies and applications for an optoelectronic hybrid AI chip public service platform
- Designed optical neural networks (e.g., Diffractive Deep Neural Networks (D^2NN)) using AI algorithms in Python
- Proposed a new D^2NN architecture for color image classification, improving the accuracy **from 46.09% to 60.85%** compared to the gray image and traditional structure of D^2NN

* Projects funded by the National Key Research and Development Program of China
** Projects funded by the National Natural Science Foundation of China

SELECTED HONORS &AWARDS

Scholarships:
2021-2022 National Scholarship in China (Top 1%) 10/2022
Excellent Student Scholarship (Top 1%) 10/2021 & 10/2022 & 10/2023

Honors:
Outstanding Graduate of Sichuan Province (Top 3% Nationwide) 07/2024
Honorary Research Student in the School of Mathematical Sciences at UESTC (Top 2 Undergraduates) 06/2024
"Most Outstanding Students" Award Nominee of UESTC (Top 20 Undergraduates) 12/2023

Awards:
Gold Medal, The 2023 ICPC Asia Hangzhou Regional Contest 12/2023
Gold Medal, The 15th Programming Competition for college students in Sichuan Province 06/2023

TEACHING EXPERIENCE

Nonlinear Dynamics and Advanced Signal Processing Techniques 09-12/2024
Instructor: Prof. Ludovico Minati | 15 Sophomores & Juniors | Spring 2024 (24hrs)

- Provided teaching feedback and organized Q&A sessions

Artificial Intelligence 09-12/2022 & 09-12/2023
Instructor: Dr. Yong Tang | 41 Sophomores | Fall 2022 (32hrs) & Fall 2023 (32hrs)

- Wrote demo code, guided students in coding example problems, and organized Q&A sessions

C&C++ Programming Language 09-12/2022 & 09-12/2023
Instructor: Dr. Yong Tang | 52 Freshmen for Fall 2022 (48hrs) | 53 freshmen for Fall 2023 (48hrs)

- Assisted in preparing course materials, explained example projects, and organized Q&A sessions

INTERNSHIPS & WORK EXPERIENCE

Artificial Intelligence Application and Technology Laboratory, UESTC | *Research Assistant* 06/2024-Present

- Assist in managing the research team, projects, and laboratory operations; guide freshman in the lab
- Conduct research and prepare documentations

AI Lab, DKWA Technologies, Chengdu, China | *Research Intern* 09/2023-Present

- Explore large Language Model applications (consultation system, local database with RAG, knowledge graph)

AI Lab, Futong Technology Co. Ltd, Chengdu, China | *Intern* 07/2021-09/2022

- Studied Artificial Intelligence in Computer Vision and applications (Video detection, Image classification)
- Crawled **2000 food images** using Python and constructed a dish classifier based on **VGG16** and **GoogleNet** to develop a deep learning-based intelligent system for food recognition

SKILLS

Computer: Python (PyTorch) (4yrs), C and C++ (7yrs), SQL (2yrs), MATLAB (3yrs), LaTeX (3yrs), 3D Studio Max (2yrs), Adobe Photoshop (2yrs), Adobe Audition (1yr)
ILETS: 7.0
Interests: Table Tennis; Piano; Animation, Cartoon, and Game (ACG)