

Yang Zhongyu

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Shenzhen, China

RESEARCH INTERESTS

Fields: Computer Vision, Computer Graphics, Image Analysis, Economics

Topics: 2D/3D AIGC; Multimodal understanding, generation, and interaction; Energy Economics

Objective: My long-term research goal is to develop intelligent machines that can actively perceive, analyze, and interpret human states, behaviors, and underlying motivations in dynamic scenes.

EDUCATION

- **Lanzhou University (Project 985)** Sept. 2021 - June.2025 (Expected)
B.S. in Mathematics(the Basic Theory Class)(Main major) and Administrative Management (Minor) Lanzhou, China
 - Relevant courses: Mathematical Analysis, Advanced Algebra, C++ Programming, Probability Theory, Ordinary Differential Equations, Numerical Analysis, Microeconomics, Differential Geometry, Functional Analysis, etc.
- **The Chinese University of Hongkong, Shenzhen** April. 2024 - Nov. 2024
Research Assistant in Laboratory for Intelligent Autonomous Systems (LIAS) at School of Data Science Shenzhen, China
 - Advisor: [Zhang Ruimao](#)
- **King Abdullah University of Science and Technology** Dec. 2024 - Present
Remote Research Intern in [Vision-CAIR](#) Group Saudi Arabia
 - Advisor: [Jun Chen](#) and [Mohamed Elhoseiny](#)

PATENTS AND PUBLICATIONS

J=Journal, P=Patent, S=Software Copyright, R=Under Review

* Indicates Corresponding Author

- [J.1] **Zhongyu Yang**, Ziyue Xue [Analysis and Forecast of GDP of Gansu Province based on ARIMA Model](#). *Chinese Market* (IF=0.6), Vol.2023-06, March 2023, Pages 1-4
- [J.2] Mengying Su, **Zhongyu Yang***, Shujaat Abbas, et al [Toward Enhancing Environment Quality in OECD Countries: Role of Municipal Waste, Renewable Energy, Environment Innovation and Environmental Policy](#). *Renewable energy* (SCI Q1Top, IF=9.0), Vol.211, July 2023, Pages 975-984
- [J.3] Zhichao Yu, Wenlan Xie, Junjie Guo, **Zhongyu Yang*** [Green Effect of Energy Transition Policy: A quasi-natural Experiment Based on New Energy Demonstration Cities](#). *Finance Research Letters* (SSCI Q1Top, IF=10.4), Vol.66, Aug. 2024, 105669
- [P.1] **Zhongyu Yang**. A mathematics teaching system based on virtual reality. (CN116312091A)
- [S.1] **Zhongyu Yang**. Green and Low-carbon Integrated Monitoring Software.(2023SR1355487)
- [S.2] **Zhongyu Yang**. Fully automatic spatial sound field environment perception system. (2024SR0538446)
- [R.1] **Zhongyu Yang**, Zuhao Yang, Yifan Yuan, et al. [ReChar: Revitalising Characters with Structure-Preserved and User-Specified Aesthetic Enhancements](#). Manuscript was under reviewed for publication in CVPR 2025.

PROJECTS

- **Web-Scale Retrieval-Augmented Generation Systems for Augmenting Vision-Based Reasoning** Dec. 2024 - Present
Supervisor: [Vision-CAIR](#) Group, KAUST
 - **Purpose:** To advance the development of RAG systems by integrating real-time web data with multimodal models, with a focus on enhancing video comprehension and visual reasoning through external knowledge exploration.
 - **Methods:** Investigating novel strategies for leveraging web search techniques to retrieve external knowledge relevant to video content and visual prompts, facilitating more accurate and context-aware augmentation of visual understanding, and improving reasoning capabilities for large-scale visual datasets.
- **A Generative Model for Revitalising Characters with Decoupled Content and Style Injection** May. 2023 - Nov. 2024
Supervisor: [Yifan Yuan](#), Heriot-Watt University, UK
 - **Purpose:** To innovate a framework inspired by pictogram Chinese characters for generating artworks that integrate customizable elements and styles into the characters.
 - **Methods:** Integrates user-defined styles and elements into Chinese characters, harnessing advanced computation for a harmonious synthesis of tradition and innovation in character art.
- **Global Urban Sustainable Development Strategies and Empirical Research** May. 2022 - June.2024
Ural Federal University Program of Development within the Priority-2030 Program(Supervisor: Prof.Zhang Guoxing)
 - **Purpose:** To analyze factors of urban green development and their impact on policy mechanisms.

- **Methods:** Applying machine learning and data mining for pattern recognition and predictive analysis to discern both the long-term equilibrium and short-term dynamics of urban green policies.
- **FPGA-Based AI Doctor: Deep Learning-Based Clinical Target Delineation for Cervical Cancer** Mar. 2024 - Present
National College Student Innovation and Entrepreneurship Training Program(Supervisor: Prof.Wang XingHua)
 - **Purpose:** To enhance the capability of identifying subtle features in medical images.
 - **Methods:** Accomplished by refining the traditional U-Net architecture and exploiting the parallel processing capabilities of FPGA, resulting in significant improvements in feature detection.
- **UNet-Centric MambaMorph: A Comprehensive Visual Mamba Framework** Jan. 2024 - Present
Enhanced with Cross-Scan and Semi-Supervised Learning for Medical Segmentation
Fundamental Research Funds for Central Universities Research Capacity Improvement Project(Supervisor: Prof.Zhang Wenting)
 - **Purpose:** To improve medical image segmentation by enhancing global context understanding.
 - **Methods:** The integration of UNet and Mamba architectures is employed, complemented by a novel Cross-Scan module, to optimize segmentation accuracy.
- **Tropical Linear Representation of Involutive Chinese Monoids** Mar. 2023 - May. 2024
National College Student Innovation and Entrepreneurship Training Program(Supervisor: Prof.Zhang Wenting)
 - **Purpose:** To introduce and define the tropical linear representation within Chinese monoids of involution.
 - **Methods:** The approach encompasses the theoretical establishment of free monoids and rewriting systems, followed by the definition of their tropical linear representations for involution in Chinese monoids.

HONORS AND AWARDS

- Best Wiki Nominees & Winners in International Directed Evolution Competition (IDEC) (2024) (**Top 5%**)
- Silver Medal in International Genetically Engineered Machine Competition (IGEM) (2024) (**Top 15%**)
- International College Mathematical Modeling Competition Meritorious Winner (2023) (**Top 6%**)
- Honorable Award of the American Collegiate Mathematical Contest in Modeling (MCM) (2023) (**Top 25%**)
- Provincial-level Gold Medal in China College Students' 'Internet+' Innovation and Entrepreneurship Competition (2023) (**Top 1%**)
- Best hardware Winner, Best Target Molecule Nominees & Winner, Best Genome Evolutionary Outcomes Nominees & Winner in International Directed Evolution Competition (IDEC 2023) (2023) (**Top 1%**)
- National First Prize in 2022 National College Student Data Analysis Competition (2022) (**Top 3%**)
- National First Prize in the National 2022 Second China University Big Data Challenge (2022) (**Top 8%**)
- Second-level Scholarship of Lanzhou University(2022,2024) (**Top 15%**)
- Outstanding Student Pacesetter of Lanzhou University(2022) (**Top 15%**)

EXPERIENCE

- **SenseTime** February 2025 - Present
Intern in General Perceptual Computing Research Shenzhen, China
 - Engaged in the search for understanding the latest multimodal knowledge & Research on streaming multimodal large model systems, and completed conference and journal papers.
- **Xi'an Jiyun Technology Co., Ltd.** Jan. 2024 - Present
Co-founder Xi'an, China
 - Research on computer science implements the latest research results into products and complete papers.
- **King Abdullah University of Science and Technology** Dec. 2024 - Present
Remote Research Intern in Vision-CAIR Group Saudi Arabia
 - Research on developing and optimizing web-scale Retrieval-Augmented Generation (RAG) systems tailored for understanding up-to-date vision knowledge, and complete conference and journal papers.
- **The Chinese University of Hongkong, Shenzhen** April. 2024 - Nov. 2024
Research Assistant in Laboratory for Intelligent Autonomous Systems (LIAS) at School of Data Science Shenzhen, China
 - Research on Image Detection and Human Motion Generation Model, implement the latest research results into products, and complete conference and journal papers.
- **Heriot-Watt University** March. 2024 - Sep. 2024
Remote Research Intern in School of Mathematical and Computer Sciences Edinburgh, UK
 - Research on Multimodal Image Generation Models, Revitalizing Characters with Decoupled Content and Style Injection, and complete conference and journal paper.
- **iFLYTEK Co., Ltd.** June 2023 - Aug. 2023
Data Analysis Assistant in Intern of Smart Home Department Lanzhou, China
 - Leveraging historical user behavior data to construct precise user profiles and predictive models, analysing to optimize marketing strategies and deliver personalized recommendations.

SKILLS AND SERVICES

- **Programming Languages:** Python, R, Stata, Latex
- **Languages:** Mandarin(Native), Cantonese(Native), English(Fluent)
- **Operation System:** Windows (advanced), Linux(advanced)
- **Journal Reviewer:** EMFT(Q1), ESPR(Q1), IJER(Q2), EEMJ(Q3), AEL(Q3)
- **Conference Reviewer:** CVPR(2025), ICLR(2025)