Jiatao **Yan**

RESEARCHER INTERN

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Computer Vision and Medical AI Postgraduate Student | Exploring Embodied Intelligence

Research Interests

- Medical Artificial Intelligence: Deep learning for medical image analysis, disease prediction and diagnosis, multi-modal clinical data integration and feature extraction, computer-aided diagnosis systems

- Embodied Intelligence: Interaction between robots and their environment, connection between perception and action in embodied agents, reinforcement learning in robotic applications

- Computer Vision: Attention-based object detection architectures, human pose estimation and behavior recognition, visual feature extraction for real-world applications

Education

Sussex Artificial Intelligence Institute, Zhejiang Gongshang University
Hangzhou, China

MASTER IN ARTIFICIAL INTELLIGENCE AND ADAPTIVE SYSTEM
Sept 2024 – Present

- Research Focus: Embodied Intelligence, Robotics
- Core Courses: Intelligence in Animals and Machines, Intelligent Systems Techniques, Image Processing, Machine Learning
- Supervisors: Assistant Professor Peter Wijeratne (University of Sussex) and Professor Xie Mande (Zhejiang Gongshang University)
- Expected Graduation: June 2027

Wenzhou Business College
Wenzhou, China

BACHELOR IN COMPUTER SCIENCE AND TECHNOLOGY
Sept 2019 – June 2023

- GPA: 3.41/5.0 (84.7/100)
- Relevant Coursework: Data Structures and Algorithms, Python Programming, Data Analysis
- Undergraduate Thesis: "Smoking behavior detection based on deep learning and skeletal framework"

Research Experience

Wenzhou Medical University First Affiliated Hospital - Hepato-Pancreato-biliary Surgery Laboratory
Wenzhou, China

RESEARCH INTERN
Sept 2022 – Jan 2023

- Participated in developing medical image preprocessing software for clinical applications, contributing to software copyright registration
- Assisted in designing deep learning models for leukemia diagnosis based on tongue image analysis
- Helped create machine learning algorithms for exosome feature analysis in hepatocellular carcinoma research
- Collaborated with medical professionals to validate the effectiveness of developed algorithms and systems

National Innovation Training Project
Wenzhou Business College

STUDENT TEAM LEADER
June 2022 – June 2023

- Participated in research on enhancing YOLO architecture with attention mechanisms for real-time object detection
- Studied the application of self-attention module and its impact on detection accuracy
- Worked with a team of 4 students, learning about technical development and experimental validation
- Contributed to the project's intellectual property outcomes, including patent applications and software copyrights

Publications

Machine Learning Identifies Exosome Features Related to Hepatocellular Carcinoma

PUBLISHED IN FRONTIERS IN CELL AND DEVELOPMENTAL BIOLOGY (IMPACT FACTOR: 6.0)
Sept 2022

- Authors: Kai Zhu, Qiqi Tao, *Jiatao Yan*, Zhichao Lang, Xinmiao Li, Yifei Li, Congcong Fan, Zhengping Yu
- DOI: 10.3389/fcell.2022.1020415
- Contribution: Assisted in developing machine learning algorithms for exosome feature analysis and classification in hepatocellular carcinoma research

Multi-omics and Machine Learning-driven CD8+ T Cell Heterogeneity Score for Prognosis

PUBLISHED IN MOLECULAR THERAPY NUCLEIC ACIDS (IMPACT FACTOR: 6.5) *Dec 2024*

- Authors: Di He, Zhan Yang, Tian Zhang, Yaxian Luo, Lianjie Peng, *Jiatao Yan*, Tao Qiu, Jingyu Zhang, Luying Qin, Zhichao Liu, Xiaoting Zhang, Lining Lin, Mouyuan Sun
- DOI: 10.1016/j.omtn.2024.102413
- Contribution: Helped implement various machine learning algorithms for key gene identification in HNSCC research

Manuscripts Under Review

Using Multiomics and Machine Learning: Insights into Improving the Outcomes of Clear Cell Renal Cell Carcinoma via SRD5A3-AS1/hsa-let-7e-5p/RRM2 Axis

UNDER REVIEW BY ACS OMEGA *Submitted February 12, 2025*

- Authors: Mouyuan Sun, Zhan Yang, Yaxian Luo, Luying Qin, Lianjie Peng, Chaoran Pan, *Jiatao Yan*, Tao Qiu, Yan Zhang
- Status: Under Review
- Contribution: Supported the implementation of machine learning algorithms for identifying key regulatory components in the SRD5A3-AS1/hsa-let-7e-5p/RRM2 axis research

Manuscripts in Preparation

YOLOv11-LCDFS: Enhanced Smoking Detection With Low-light Enhancement

IN REVISION

- Authors: *Jiatao Yan*, Zhuzikai Zheng, Zhengtan Yang, Hao Jiang, Peichen Wang, Fangjun Kuang, Siyang Zhang
- Contribution: First author working on a YOLO-based architecture with integrated low-light enhancement capabilities, specialized loss functions, attention mechanisms, and optimized upsampling techniques for improved detection in challenging lighting conditions

Deep Learning Model for Survival Prediction of Localized Upper Tract Urothelial Carcinoma Based on Multi-Phase CT Images and Clinical Data

IN REVISION

- Authors: Kai Zhu, Binwei Lin, *Jiatao Yan*, Honghui Zhu, Wei Chen, Xin Yao, Fengyan You, Yue Pan, Feng Wang, Peng Xia, Yeping Li, Lianguo Chen, Zhixian Yu, Shouliang Miao, Xiaomin Gao
- Status: Revision Required
- Contribution: Assisted in developing the deep learning architecture for multi-phase CT image analysis and integrating it with clinical data for prediction modeling

Patents & Intellectual Property

2023	**Patent Application,** Smoking Behavior Recognition Camera and Determination Method		*No: 202310277784.1*
2022	**Software Copyright,** Medical Image Computing Software		*2022SR0252378*
2022	**Software Copyright,** Human Skeleton Recognition Software		*2022SR1258998*
2022	**Software Copyright,** Cigarette Recognition Software		*2022SR1277520*
2022	**Software Copyright,** Smoking Behavior Detection Software		*2022SR1277521*

Academic Achievements

Ongoing	**Bronze Medal (87th/1093, Top 8%),** Stanford RNA 3D Folding Competition	*Kaggle Global Competition*
Ongoing	**Ranked 154th/2565 (Top 6%),** Predict Podcast Listening Time Competition	*Kaggle Global Competition*
Sept 2022	**442nd Place (Top 38%),** HuBMAP + HPA Competition	*Kaggle Global Competition*
May 2023	**Bronze Medal Recipient,** 18th Challenge Cup College Student Competition	*Zhejiang Province*
Dec 2021	**Provincial Excellent Award,** 4th National "Chuanzhi Cup" IT Skills Competition	*Zhejiang Province*
April 2024	**3rd Prize Recipient,** 2023 Wenzhou Computer Society Student Member Innovation and Entrepreneurship Award	*Wenzhou*
May 2022	**1st Place Team Member,** Internet+ School-level Competition	*Wenzhou Business College*