RUI-YANG JU

2000.01.26 | Email | Homepage | GitHub | Google Scholar | ORCID | Taipei City, Taiwan

EDUCATION

Kyoto University
Kyoto, Japan

Doctor of Philosophy (PhD), Graduate School of Informatics — 2025.10 – Present

- Lab: Large-Scale Text Archive Laboratory, Advisor: Prof. Shinsuke Mori

National Taiwan University
Taipei, Taiwan

MASTER OF SCIENCE (M.S.), Graduate Institute of Networking and Multimedia — 2023.09 – 2025.06

- Average Score: **92.30/100**, GPA: **4.03/4.3**
- Lab: imLab, Advisor: Prof. Yi-Ping Hung

Tamkang University
New Taipei, Taiwan

BACHELOR OF ENGINEERING (B.E.), Electrical and Computer Engineering — 2019.09 – 2023.06

- Average Score: **94.50/100**, GPA: **4.0/4.0**
- Overall Department Ranking: **1st/68**
- Lab: AMOS Lab., Advisor: Prof. Jen-Shiun Chiang

WORK EXPERIENCES

Renmin University of China
Beijing, China

Research Assistant (RA), Center for Applied Statistics, School of Statistics — 2025.06 – Present

- Conducting research on video understanding and remote sensing image processing.
- Supervised by Prof. Yanbing Bai

RESEARCH INTERESTS

My primary research interests include Deep Learning (DL), Neural Networks (NN), Computer Vision (CV), and Image Processing (IP). In addition, I have contributed to some projects in other fields, such as Natural Language Processing (NLP), and Speech & Audio. My completed and current research focuses on the following topics:

- **3D Gaussian Blendshapes for Head Avatar**: Computer Graphics, 3D Computer Vision, 3D Head Avatar, Gaussian Blendshapes, Gaussian Splatting, Facial Animation, Facial Tracking.
- **3D Facial Expression Reconstruction**: Computer Graphics, 3D Computer Vision, 3D Morphable Model, Facial Animation, Facial Reconstruction.
- **Color Degraded Document Image Binarization**: Image Generation, Image Enhancement, Image Binarization, Generative Adversarial Network, Discrete Wavelet Transform.
- **Fracture Detection on Pediatric Wrist Trauma X-ray Images**: Medical Image Processing, Medical Imaging Diagnostics, Object Detection, Fracture Detection, You Only Look Once, Attention Mechanism.
- **Layer and Block Connection Strategy**: Image Recognition, Image Classification, Image Super-Resolution, Convolutional Neural Network, Transformer, Network Architecture Design, Residual Learning.

PUBLICATIONS

Journal Papers

[J7] Chun-Tse Chien, Rui-Yang Ju, Kuang-Yi Chou, Enkaer Xieerke, Jen-Shiun Chiang, "YOLOv8-AM: YOLOv8 Based on Effective Attention Mechanisms for Pediatric Wrist Fracture Detection", *IEEE Access*, 2025. **(IF 3.4)** [arXiv] [DOI] [GitHub]

[J6] Rui-Yang Ju, Yu-Shian Lin, Yanlin Jin, Chih-Chia Chen, Chun-Tse Chien, Jen-Shiun Chiang, "Three-stage Binarization of Color Document Images Based on Discrete Wavelet Transform and Generative Adversarial Networks", *Knowledge-Based Systems*, 2024. **(IF 7.2)** [arXiv] [DOI] [GitHub]

[J5] Chun-Tse Chien, Rui-Yang Ju, Kuang-Yi Chou, Jen-Shiun Chiang, "YOLOv9 for Fracture Detection in Pediatric Wrist Trauma X-ray Images", *Electronics Letters*, 2024. **(IF 0.7)** [arXiv] [DOI] [GitHub]

[J4] Rui-Yang Ju, Weiming Cai, "Fracture Detection in Pediatric Wrist Trauma X-ray Images Using YOLOv8 Algorithm", *Scientific Reports*, 2023. **(IF 3.8)** [arXiv] [DOI] [GitHub]

[J3] Rui-Yang Ju*, Chih-Chia Chen*, Jen-Shiun Chiang, Yu-Shian Lin, Wei-Han Chen (*=equal contribution), "Resolution Enhancement Processing on Low Quality Images Using Swin Transformer Based on Interval Dense Connection Strategy", *Multimedia Tools and Applications*, 2023. **(IF 3.0)** [arXiv] [DOI] [GitHub]

[J2] Rui-Yang Ju, Ting-Yu Lin, Jia-Hao Jian, Jen-Shiun Chiang, "Efficient Convolutional Neural Networks on Raspberry Pi for Image Classification", *Journal of Real-Time Image Processing*, 2023. **(IF 2.9)** [arXiv] [DOI] [GitHub]

[J1] Rui-Yang Ju, Ting-Yu Lin, Jia-Hao Jian, Jen-Shiun Chiang, Wei-Bin Yang, "ThreshNet: An Efficient DenseNet Using Threshold Mechanism to Reduce Connections", *IEEE Access*, 2022. **(IF 3.9)** [arXiv] [DOI] [GitHub]

Conference Papers

[C9] Yanlin Jin, Rui-Yang Ju, Haojun Liu, Yuzhong Zhong, "ORB-SfMLearner: ORB-Guided Self-supervised Visual Odometry with Selective Online Adaptation", *IEEE International Conference on Robotics and Automation* (*ICRA*), Atlanta, USA, 2025. [arXiv] [Project]

[C8] Rui-Yang Ju, Chun-Tse Chien, Chia-Min Lin, Jen-Shiun Chiang, "Global Context Modeling in YOLOv8 for Pediatric Wrist Fracture Detection", *International Symposium on Intelligent Signal Processing and Communication Systems* (*ISPACS*), Kaohsiung, Taiwan, 2024. [arXiv] [DOI] [GitHub]

[C7] Yanbing Bai, Siao Li, Rui-Yang Ju, Zihao Yang, Jinze Yu, Jen-Shiun Chiang, "FAD-SAR: A Novel Fishing Activity Detection System via Synthetic Aperture Radar Images Based on Deep Learning Method", *International Symposium on Intelligent Signal Processing and Communication Systems* (*ISPACS*), Kaohsiung, Taiwan, 2024. [arXiv] [DOI]

[C6] Rui-Yang Ju, Chun-Tse Chien, Jen-Shiun Chiang, "YOLOv8-ResCBAM: YOLOv8 Based on An Effective Attention Module for Pediatric Wrist Fracture Detection", *International Conference on Neural Information Processing* (*ICONIP*), Auckland, New Zealand, 2024. [arXiv] [DOI] [GitHub]

[C5] Rui-Yang Ju, Yu-Shian Lin, Jen-Shiun Chiang, Chih-Chia Chen, Wei-Han Chen, Chun-Tse Chien, "CCDWT-GAN: Generative Adversarial Networks Based on Color Channel Using Discrete Wavelet Transform for Document Image Binarization", *Pacific Rim International Conference on Artificial Intelligence* (*PRICAI*), Jakarta, Indonesia, 2023. [arXiv] [DOI] [GitHub]

[C4] Rui-Yang Ju, Jen-Shiun Chiang, Chih-Chia Chen, Yu-Shian Lin, "Connection Reduction of DenseNet for Image Recognition", *International Symposium on Intelligent Signal Processing and Communication Systems* (*ISPACS*), Penang, Malaysia, 2022. [arXiv] [DOI] [GitHub]

[C3] Rui-Yang Ju, Ting-Yu Lin, Jen-Shiun Chiang, "TripleNet: A Low-Parameter Network for Low Computing Power Platform", *IET International Conference on Engineering Technologies and Applications* (*IET-ICETA*), Changhua, Taiwan, 2022. [arXiv] [DOI] [GitHub]

[C2] Rui-Yang Ju, Ting-Yu Lin, Jen-Shiun Chiang, Jia-Hao Jian, Yu-Shian Lin, Liu-Rui-Yi Huang, "Aggregated Pyramid Vision Transformer: Split-transform-merge Strategy for Image Recognition without Convolutions", *IEEE International Conference on Consumer Electronics - Taiwan* (*ICCE-TW*), Taipei, Taiwan, 2022. [arXiv] [DOI]

[C1] Rui-Yang Ju, Ting-Yu Lin, Jen-Shiun Chiang, "New Pruning Method Based on DenseNet Network for Image Classification", *International Conference on Technologies and Applications of Artificial Intelligence* (*TAAI*), Taichung, Taiwan, 2021. [arXiv] [DOI]

arXiv Preprint Papers

[A5] Yanbing Bai*, Rui-Yang Ju*, Lemeng Zhao*, Junjie Hu, Jianchao Bi, Erick Mas, Shunichi Koshimura (*=equal contribution), "Two-Stage Framework for Efficient UAV-Based Wildfire Video Analysis with Adaptive Compression and Fire Source Detection", *arXiv preprint*, 2025.

[A4] Rui-Yang Ju, Sheng-Yen Huang, Yi-Ping Hung, "ToonifyGB: StyleGAN-based Gaussian Blendshapes for 3D Stylized Head Avatars", *arXiv preprint*, 2025. [arXiv]

[A3] Rui-Yang Ju, Chun-Tse Chien, Enkaer Xieerke, Jen-Shiun Chiang, "Pediatric Wrist Fracture Detection Using Feature Context Excitation Modules in X-ray Images", *arXiv preprint*, 2024. [arXiv] [GitHub]

[A2] Rui-Yang Ju, KokSheik Wong, Jen-Shiun Chiang, "Efficient GANs for Document Image Binarization Based on DWT and Normalization", *arXiv preprint*, 2024. [arXiv] [GitHub]

[A1] Yanbing Bai, Zihao Yang, Jinze Yu, Rui-Yang Ju, Bin Yang, Erick Mas, Shunichi Koshimura, "Flood data analysis on SpaceNet 8 using Apache Sedona", *arXiv preprint*, 2024. [arXiv]

PROJECT EXPERIENCES

- "Smile Resonance: Affective Technology and Generative Art for a Serene Life in 2049", National Science and Technology Council (NSTC), Taiwan, Led by Prof. Yi-Ping Hung, 2025 – 2026, NT$5,000,000.
- "Automatic Synthesis of Facial Expression for Virtual Characters in Metaverse", National Science and Technology Council (NSTC), Taiwan, Led by Prof. Yi-Ping Hung, 2023 – 2025, NT$2,130,000.
- "Research and Implementation of Artificial Intelligent Image Super Resolution and Semantic Segmentation Technologies for Detection of Cracks of General Buildings", National Science and Technology Council (NSTC), Taiwan, Led by Prof. Jen-Shiun Chiang, 2023 – 2025, NT$1,756,000.
- "Research of Transformer Based Architecture for High-Efficiency Multi-Feature Fusion Document Semantic Segmentation System", National Science and Technology Council (NSTC), Taiwan, Led by Prof. Jen-Shiun Chiang, 2022 – 2023, NT$690,000.
- "Improved Semantic Segmentation Network", Research Incentive Grant, Office of Research and Development, Tamkang University, 2021-2022, NT$48,000.

HONORS AND SCHOLARSHIPS

Honors and Awards

- Silver Medal (Top 4%), Google Universal Image Embedding Challenge, ECCV 2022 Competition, 2022.10.
- Excellent Academic Performance Award, Tamkang University, 2022.05.
- The Innovation and Entrepreneurship Competition Excellent Award, Tamkang University, 2021.05.

Scholarships

- National Taiwan University Scholarship, 2023 – 2025, Total: NT$32,000.
- National Taiwan University (imLab) Scholarship, 2024, Total: NT$36,000.
- Sino International Business Innovation Association (SIBIA) Scholarship, 2021, 2022, 2024, Total: US$900.

- Tamkang University Research Scholarship, 2021 – 2022, Total: NT$48,000.
- Tamkang University Scholarship (Top 1%), 2021, 2022, Total: NT$20,000.

PATENTS

- Rui-Yang Ju, “Dust-sucking loading device”, TW Patent, M595589U, 2020.05. [Google Patents]
- Rui-Yang Ju, “Cigarette box capable of keeping cigarette butts”, TW Patent, M576794U, 2019.04. [Google Patents]

PROFESSIONAL SERVICES

Journal Reviewer

- Pattern Recognition.
- Knowledge-Based Systems.
- Neurocomputing.
- Neural Networks.
- IEEE Signal Processing Letters.
- Engineering Applications of Artificial Intelligence.
- Scientific Reports.
- Cognitive Computation.
- International Journal of Multimedia Information Retrieval.
- International Journal of Machine Learning and Cybernetics.
- PLOS One.
- Journal of Real-Time Image Processing.
- International Journal of Computational Intelligence Systems.
- The Journal of Supercomputing.
- Frontiers in Computer Science.
- Signal, Image and Video Processing.
- Telecommunication Systems.
- Journal of Engineering.
- Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization.

Conference Committee and Reviewer

- Pacific Rim International Conference on Artificial Intelligence (PRICAI), Wellington, New Zealand, 2025, Program Committee.
- International Joint Conference on Neural Networks (IJCNN), Rome, Italy, 2025, Reviewer.
- IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Hyderabad, India, 2025, Reviewer.
- Pacific Rim International Conference on Artificial Intelligence (PRICAI), Kyoto, Japan, 2024, Program Committee.
- Pacific Rim International Conference on Artificial Intelligence (PRICAI), Jakarta, Indonesia, 2023, Program Committee.

PROFESSIONAL MEMBERSHIPS

IET Member (Student Member: 2022.06 – 2023.09) 2022.06 – Present

IEEE Student Member 2022.03 – Present

EXCHANGE EXPERIENCES

University of Cambridge *Cambridge, United Kingdom*

- Online Course: An Introduction to AI Ethics and Society 2021.06 – 2021.07

Fudan University *Shanghai, China*

- FIST Course: Scientific Methodology and Scientific Paper Writing 2019.09 – 2019.09

Peking University *Beijing, China*

- Summer Course: Video Editing 2019.08 – 2019.08