

# RUI-YANG JU

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## EDUCATION

### National Taiwan University

Taipei City, Taiwan

**MASTER OF SCIENCE (M.S.)** In Graduate Institute of Networking and Multimedia

2023.09 – 2025.06

- Average Score: **95.23/100**, GPA: **4.03/4.3**
- Lab: **imLab**, Advisor: Prof. **Yi-Ping Hung**

### Tamkang University

New Taipei City, Taiwan

**BACHELOR OF ENGINEERING (B.E.)** In 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**

## 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. [\[arXiv\]](#) [\[GitHub\]](#)

- [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

- [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

- “**Automatic Expression Synthesis Technology for Metaverse Virtual Avatars**”, National Science and Technology Council (NSTC), Taiwan, Led by Prof. Yi-Ping Hungxs, 2024 – 2025, NT\$1,142,000.
- “**Image Super-Resolution and Semantic Segmentation Technology Applied to Building Crack Detection**”, National Science and Technology Council (NSTC), Taiwan, Led by Prof. Jen-Shiun Chiang, 2023 – 2025, NT\$1,756,000.
- “**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, TWD48,000.

## 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.
- IEEE Signal Processing Letters.
- Scientific Reports.
- Cognitive Computation.
- International Journal of Multimedia Information Retrieval.
- International Journal of Machine Learning and Cybernetics.
- PLOS One.
- International Journal of Computational Intelligence Systems.
- The Journal of Supercomputing.
- Frontiers in Computer Science.

- Signal, Image and Video Processing.
- Telecommunication Systems.
- 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