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: **4.17/4.3**
- 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**
- Advisor: Prof. **Jen-Shiun Chiang**

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

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:

[R4] **3D Facial Expression Reconstruction**: Computer Graphics, 3D Computer Vision, 3D Morphable Model, 3D Face Reconstruction, 3D Face Animation.

[R3] **Color Degraded Document Image Binarization**: Image Generation, Image Enhancement, Image Binarization, Generative Adversarial Network, Discrete Wavelet Transform.

[R2] **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.

[R1] **Layer and Block Connection Strategy**: Image Recognition, Image Classification, Image Super-Resolution, Convolutional Neural Network, Transformer, Network Architecture Design, Residual Learning.

PUBLICATIONS

Journal Papers

[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] [Published] [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] [Published] [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] [Published] [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 (MTA)*, 2023. **(IF 3.0)** [arXiv] [Published] [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 (JRTIP)*, 2023. **(IF 2.9)** [arXiv] [Published] [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] [Published] [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] [Webpage]

[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] [Published] [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] [Published]

[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 Conferences on Artificial Intelligence* (*PRICAI*), Jakarta, Indonesia, 2023. [arXiv] [Published] [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] [Published] [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] [Published] [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] [Published]

[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] [Published]

arXiv Preprint Papers

[A5] 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]

[A3] Rui-Yang Ju, KokSheik Wong, Jen-Shiun Chiang, **"Efficient GANs for Document Image Binarization Based on DWT and Normalization"**, *arXiv preprint*, 2024. [arXiv] [GitHub]

[A2] 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"**, *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]

PATENTS

[P2] Rui-Yang Ju, **"Dust-sucking loading device"**, TW Patent, M595589U, 2020.05. [Google Patents]

[P1] Rui-Yang Ju, **"Cigarette box capable of keeping cigarette butts"**, TW Patent, M576794U, 2019.04. [Google Patents]

SCHOLARSHIPS

[S12] Mainland China Student Scholarship, National Taiwan University, 2024.11, TWD9,000.

[S11] Mainland China Student Scholarship, National Taiwan University, 2024.05, TWD8,000.

[S10] Mainland China Student Scholarship, Sino International Business Innovation Association, 2024.05, USD600.

[S9] Master Research Scholarship, National Taiwan University, 2024.02, TWD36,000.

[S8] Mainland China Student Scholarship, National Taiwan University, 2023.11, TWD8,000.

[S7] Excellent Performance Scholarship, Tamkang University, 2022.12, TWD10,000.

[S6] Mainland China Student Scholarship, Sino International Business Innovation Association, 2022.03, USD200.

[S5] Excellent Performance Scholarship, Tamkang University, 2021.05, TWD10,000.

[S4] Mainland China Student Scholarship, Sino International Business Innovation Association, 2021.03, USD100.

[S3] Excellent Performance Scholarship, Feng Chia University, 2019.11, TWD8,000.

[S2] Mainland China Student Scholarship, Feng Chia University, 2019.08, TWD58,000.

[S1] Excellent Performance Scholarship, Feng Chia University, 2019.03, TWD8,000.

HONORS AND AWARDS

Academic Competitions

[AC3] Excellent Academic Performance Award, Tamkang University, 2022.05.

[AC2] The Innovation and Entrepreneurship Competition Excellent Award, Tamkang University, 2021.05.

[AC1] The Entrepreneurship Weekend Best Popularity Award, Feng chia University, 2018.12.

Taekwondo Competitions

[TC6] Bronze Medal, Strawberry Cup National College Taekwondo Competition, 2021.03.

[TC5] Gold Medal , The 7th Zhonghua Cup National College Taekwondo Championship, 2020.11.

[TC4] Silver Medal, 2019 National College Taekwondo Championships, 2019.12.

[TC3] Silver Medal, The 6th Zhonghua Cup National College Taekwondo Championship, 2019.12.

[TC2] Gold Medal, The 12th Hongguang Cup National College Taekwondo Championship, 2019.03.

[TC1] Gold Medal, The 8th Hongguang Cup National College Taekwondo Cultural Festival, 2018.11.

GRANTS

[G3] Co-Investigator, **"Image Super-Resolution and Semantic Segmentation Technology Applied to Building Crack Detection"**, National Science and Technology Council (NSTC), Taiwan, 2023-2025, TWD1,756,000, Led by Prof. Jen-Shiun Chiang.

[G2] Co-Investigator, **"Transformer Based Architecture for High-Efficiency Multi-Feature Fusion Document Semantic Segmentation System"**, National Science and Technology Council (NSTC), Taiwan, 2022-2023, TWD690,000, Led by Prof. Jen-Shiun Chiang.

[G1] Principal Investigator, **"Improved Semantic Segmentation Network"**, Research Incentive Grant, Office of Research and Development, Tamkang University, 2021-2022, TWD48,000.

PROFESSIONAL SERVICES

Journal Reviewer

IEEE Signal Processing Letters.
Cognitive Computation.
Telecommunication Systems.
International Journal of Computational Intelligence Systems.
Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization.
International Journal of Multimedia Information Retrieval.
Scientific Reports.
Plos One.
Signal, Image and Video Processing.
The Journal of Supercomputing.
Frontiers in Computer Science.
International Journal of Machine Learning and Cybernetics.
Knowledge-based Systems.

Conference 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	2024.04 – Present
IET Student Member	2022.06 – 2023.09
IEEE Student Member	2022.03 – Present

EXTRA-CURRICULAR ACTIVITIES

Vice Director, Tamkang Taekwondo Club	2020.09 – 2021.06
Minister of Event Planning/Activities Department, Tamkang Taekwondo Club	2020.01 – 2020.06
Minister of Extra-Association Affair Department, Feng Chia Taekwondo Club	2019.01 – 2019.06
Power Forward (PF) / Center (C), Basketball Team of Department, Feng Chia University	2018.09 – 2019.01
Power Forward (PF) / Center (C), Basketball Team of Feng Chia Mainland China Club	2018.09 – 2019.01

VOLUNTEERS

Bali Shanti Volunteers	*Bali, Indonesia*
Teaching Program	2021.01 – 2021.02
Volunteers for Peace Vietnam	*Ho Chi Minh, Vietnam*
Social Restaurant Program	2019.01 – 2019.01