

Yanlai Wu 伍彦来

AI RESEARCHER · COMPUTER VISION & MULTIMODAL LLMs

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M.S. researcher in ECE at Rowan University (advisor: Dr. Ying Tang, IEEE Fellow) building computer-vision and multimodal-LLM systems that hold up in real-world conditions, from test-time few-shot detection to cockpit visual understanding. Co-author of five papers, including two IEEE Transactions journal papers (one as first author) and an ACM Multimedia paper; former computer vision intern at Lenovo, where I shipped production OCR pipelines.

Experience

Graduate Researcher · Aviation Symbolology & Visual Understanding

2025 – Present

Rowan University · Dr. Ying Tang's Lab · Glassboro, NJ

- Build cockpit visual-understanding pipelines covering HUD instruments, sectional charts, weather radar and traffic scenes.
- Develop aviation-symbolology features: overlay rendering, chart and radar parsing, TCAS-style display logic and screen-space indicator behavior.
- Combine multimodal reasoning, interface logic and real avionics context into interactive prototypes that behave like tools, not demos.

AI Developer · PING

2024 – Present

Rowan University · Personalized Instruction & Need-aware Gamification

- Develop LLM-driven peer agents, adaptive learning modules and the student-facing game interactions.
- Own prompt design, interaction logic and the web front end, so each student gets support tailored to their needs.

Computer Vision Intern

Nov 2023 – Aug 2024

Lenovo · Beijing, China

- Built two production OCR / handwriting-recognition pipelines: online (live pen strokes) and offline (scanned images).
- Designed recognition algorithms for production computer-vision scenarios, spanning handwriting and general pattern-recognition tasks.

Publications

1. Test-Time Few-Shot Object Detection via Dynamic Prototype Fusion

FIRST AUTHOR

IEEE Transactions on Cybernetics, 2026 · Q1 journal

2. TIDE: Test-Time Few-Shot Object Detection

IEEE Transactions on Systems, Man, and Cybernetics: Systems, 2024 · Q1 journal

3. RDLNet: A Novel and Accurate Real-world Document Localization Method

ACM International Conference on Multimedia (MM 2024), 2024 · CCF-A · CORE A*

4. Enhancing Fatigue Detection through Heterogeneous Multi-Source Data Integration and Cross-Domain Modality Imputation

arXiv preprint 2507.16859, 2025 · Rowan × Chongqing Jiaotong

5. Enhancing Game-Based Learning with AI-Driven Peer Agents

IEEE Frontiers in Education Conference (FIE 2025), work in progress, 2025 · Engineering education

Education

Rowan University

M.S., Electrical & Computer Engineering

2024 – Present · Glassboro, NJ, USA

Advisor: Dr. Ying Tang (IEEE Fellow). Research in aviation visual understanding and educational AI.

Chongqing Jiaotong University

B.S., Artificial Intelligence

2020 – 2024 · Chongqing, China

Skills

COMPUTER VISION

Object detection · YOLO · Few-shot & test-time adaptation · OCR & handwriting recognition · Document localization · Pattern recognition · OpenCV

MULTIMODAL & LLMs

Multimodal LLMs · LLM agents · Prompt design · Multi-source data fusion · Cross-modal imputation

PROGRAMMING & ML

Python · C++ · PyTorch · NumPy

SYSTEMS & WEB

React · FastAPI · Nginx · Linux · SSH deployment · Full-stack prototyping

AVIATION SYSTEMS

HUD symbolology · Sectional charts · Weather radar · ADS-B · TCAS display logic

LANGUAGES

Chinese · native · English · professional

Honors

2023 Provincial First Prize

Blue Bridge Cup, National Software & IT Talent Competition

2023 Honorable Mention

MCM/ICM, Mathematical Contest in Modeling

2022 National Second Prize

National New Engineering AI Algorithm Practical Application Competition

2021 National First Prize

FLTRP-ETIC Cup National English Public Speaking Contest

2021 National Second Prize

FLTRP-ETIC Cup National English Writing Contest