

# YANLAI WU

AI RESEARCHER / ENGINEER · AVIATION SYSTEMS · EDUCATIONAL AI · DEPLOYED WEB PRODUCTS

M.S. ADVISOR: YING TANG · IEEE FELLOW · ROWAN UNIVERSITY

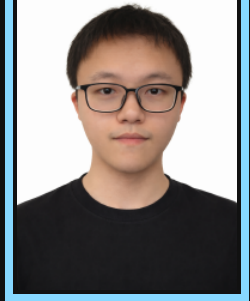
Rowan ECE graduate student building cockpit visual-understanding systems, LLM-based learning tools, and public-facing AI web products. Research-first, systems-oriented, and focused on turning ideas into deployable interfaces.

PHONE +1 848-260-9934 · +86 131-9309-9169

EMAIL wuyanl37@rowan.edu

GITHUB github.com/CatfishW

BASE Glassboro, NJ · Rowan University / ECE



## EXPERIENCE

### Aviation Symbolology / Visual Understanding Research Rowan

COCKPIT VISUALS · HUD INSTRUMENTS · AVIATION SYSTEMS

- Designed cockpit visual-understanding pipelines for HUD instruments, sectional charts, weather radar, and traffic-awareness scenes.
- Built aviation symbolology features spanning overlays, chart/radar interpretation, TCAS-like display logic, and screen-space indicator behavior.
- Connected multi-modal reasoning, interface logic, and operational aviation context into interactive prototype systems.

### AI Developer – PING Rowan

PERSONALIZED INSTRUCTION AND NEED-AWARE GAMIFICATION

- Developed LLM-driven peer agents, adaptive learning modules, and student-facing game interactions.
- Worked across prompt design, interaction logic, and deployable web experiences for need-aware personalized learning.

### Computer Vision Intern – Lenovo Nov 2023 - Aug 2024

OCR · HANDWRITING RECOGNITION · PATTERN RECOGNITION

- Designed OCR algorithms for online and offline handwriting recognition and pattern-recognition tasks in production-oriented computer-vision settings.

## PUBLICATIONS

### Test-Time Few-Shot Object Detection via Dynamic Prototype Fusion

IEEE TRANSACTIONS ON CYBERNETICS · 2026 · Q1 JOURNAL

Extends few-shot detection to more robust inference-time adaptation through dynamic prototype refinement under domain and category shift.

### TIDE: Test-Time Few-Shot Object Detection

IEEE TSMC: SYSTEMS · 2024 · Q1 JOURNAL · IF ~8-9

Introduces a test-time few-shot detection setting that avoids model fine-tuning and supports fast or black-box configuration.

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

ACM MULTIMEDIA 2024 · CCF A · CORE A\*

Proposes a real-world document-localization benchmark and lightweight localization network for difficult mobile capture conditions.

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

ARXIV 2507.16859 · ROWAN UNIVERSITY / CHONGQING JIAOTONG COLLABORATION

Frames practical fatigue detection as a multi-source, modality-misaligned learning problem and transfers high-fidelity sensor knowledge into deployment-oriented settings.

### Enhancing Game-Based Learning with AI-Driven Peer Agents

IEEE FRONTIERS IN EDUCATION · 2025 · ENGINEERING EDUCATION VENUE

Explores AI peer agents as interactive collaborators inside game-based learning environments, connecting SPARC-style experiences to educational outcomes.

## PROJECTS

### FAA / Aviation Symbolology cockpit AI

HUD INSTRUMENT LOCALIZATION · CHART/RADAR INTERPRETATION

Built cockpit visual-understanding and aviation symbolology systems, including HUD-instrument localization, weather-severity mapping, TCAS-like traffic display logic, and AR-style indicator behavior.

### SPARC learning through play

STEM EXPERIENCE · AI PEER AGENTS · GAME WEB

Designed and supported SPARC learning-through-play experiences for STEM education, combining web interaction, narrative flow, and AI-driven peer-agent contexts.

### LAM / LAMMP agent workflow

LARGE ACTION MODEL · EDUCATIONAL INTERACTION

Developed Large Action Model based educational interaction flows focused on task-oriented guidance, adaptive support, and deployable user-facing experiences.

### PING interactive learning

PERSONALIZED INSTRUCTION AND NEED-AWARE GAMIFICATION

Built LLM-driven peer agents and adaptive learning modules for interactive educational platforms with personalized feedback and need-aware gamification.

## WEBS DEPLOYED

### LAMMP

lammp.agaii.org

### SPARC GAME

game.agaii.org

### YANLAI STUDIO

mc.agaii.org/YanlaiLongVideo/

### PING

ping.agaii.org

### TANG LLM

tang.agaii.org/llm/

## SKILLS

PYTHON

C++

PYTORCH

YOLO

OCR

COMPUTER VISION

MULTI-MODAL LLM

HUD SYMBOLLOGY

ADS-B

REACT

FASTAPI

NGINX

SSH DEPLOYMENT

## EDUCATION

### Rowan University 2024 - Present

MASTER OF SCIENCE · ELECTRICAL AND COMPUTER ENGINEERING

### Chongqing Jiaotong University 2020 - 2024

BACHELOR OF SCIENCE · ARTIFICIAL INTELLIGENCE

## NATIONAL AWARDS (CHINA)

- Second Prize, National New Engineering (AI Algorithm) Practical Application Competition (2022)
- Provincial First Prize, Blue Bridge Cup (2023)
- Honorable Mention, MCM/ICM (2023)



### ROWAN UNIVERSITY

ELECTRICAL & COMPUTER ENGINEERING · GLASSBORO, NJ