

# Yuan Ning

ADD: 10 Cuizhu Street, Gaoxin District, Zhengzhou, Henan, 450000, China

TEL: +86-13949122613 | E-mail: yuanning.nn@gmail.com | PHP: yuann1ng.github.io

## EDUCATION BACKGROUND

### Henan University of Technology

B.S. in Computer Science and Technology

GPA: 3.22 / 4.0

Zhengzhou, China

Jun 2026 (expected)

### International Study

Kenilworth Science & Technology Charter School

Baton Rouge, US

Aug 2016 – Feb 2017

Glasgow Middle School

Baton Rouge, US

Feb 2016 – Jun 2016

## RESEARCH INTERESTS

Computer Vision, Vision-Language Model, Multi-modality Learning

## RESEARCH EXPERIENCE

### Vision-Language Model for Unsound Wheat Grain Classification

Project Leader | Advisor: Pengtao Lv | Henan University of Technology

Zhengzhou, China

March 2025 – Present

- Integrated image and text information by fine-tuning CLIP. Provided a paradigm for the development of multi-modality in the unsound wheat grain classification field, effectively solving the challenge of data scarcity
- Leveraged Qwen2.5-VL's fine-grained recognition to generate detailed textual descriptions of each wheat grain class as prompt texts from a set of images to assist in generating discriminative classifier weights.
- Proposed UWGC-CLIP(Unsound Wheat Grain Classification) framework, which contains three modules: Prompt generation, Vision-language classification, Ensembling output

### ECA-ModNet: An Efficient Unsound Wheat Grain Recognition Network for Edge Devices

Project Leader | Advisor: Pengtao Lv | Henan University of Technology

Zhengzhou, China

Dec 2024 – March 2025

- Proposed the ModFused-MBConv block, which captures the benefits of self-attention (SA) purely through convolution, enabling it to model long-range dependencies while preserving strong local structure awareness
- Improved the MBConv block by replacing the original SE block with the ECA attention mechanism, which preserves channel dimensionality while efficiently capturing cross-channel interactions with lower computational cost
- Developed ECA-ModNet, a lightweight and efficient network for unsound wheat grain recognition, which reduces parameters by 3.7M while improving accuracy by 3.17% over baseline (EfficientNetV2-S), as validated on the CVPR dataset

### An Improved Lightweight ConvNeXt for Rice Classification

Research Assistant | Advisor: Pengtao Lv | Henan University of Technology

Zhengzhou, China

Sep 2024 – Dec 2024

- Conducted comprehensive experiments on CBAM-ParNeXt V1 and V2, evaluating their overall and

subclass-level performance using a confusion matrix

- Trained popular neural network models to validate the effectiveness of our proposed model through comparison
- Cleaned and organized the dataset, then applied data augmentation (rotation, flipping, cropping, etc.) to enhance diversity and improve model generalization

### **Identification and Optimization of Ecological Security Patterns Using a Bayesian Network Model: Based on Trade-offs in Ecosystem Services**

*Research Assistant | Advisor: Xuning Qiao | Henan Polytechnic University*

Zhengzhou, China

Jun 2024 – Sep 2024

- Constructed a Bayesian network to probabilistically model the relationships between variables (e.g., rainfall, evapotranspiration, population density) and their states affecting ecosystem services
- Conducted sensitivity analysis on nodal factors using the Bayesian network to identify key variables impacting ecosystem service trade-offs and proposed the optimal subset of states for these variables
- Leveraged mathematical packages (e.g., NumPy) in Python to improve calculation efficiency during experiments and used visualization tools (e.g., Matplotlib, Seaborn) to present results effectively

### **How Well Does Street View Measure Actual Vision Experimental Comparison of Visual Measurements in Street View Imagery and Visual Perception**

*Research Assistant | Advisor: Yi Zhang | Zhengzhou University*

Zhengzhou, China

Feb 2024 – May 2024

- Utilized the U-Net semantic segmentation model to evaluate performance under different projection methods (e.g., equirectangular, cubic, fisheye) and investigate how projection distortions from 3D environments to 2D street view images impact segmentation accuracy, comparing classification biases across projection approaches
- Calculated key experimental parameters (e.g., angle, ratio relative error) using Python, and employed visualization tools like Matplotlib and Seaborn to present results intuitively and analyze error trends between measurement methods (pixel proportion vs. solid angle)
- Completed the relative proportion comparison experiment by adjusting the distance and elevation angle between the sphere and the observer, measuring the sphere's size variations under different Street View Imagery (SVI) projections and solid angles

### **Coupling Mechanism of Urban-Rural Transformation and Ecological Environment in Mountainous and Hilly Counties: A Case Study of Lingbao City, Henan Province**

*Research Assistant | Advisor: Mingyang Cheng | Zhengzhou University*

Zhengzhou, China

Sep 2023 – Dec 2023

- Investigated factors affecting the coupling coordination degree using the GeoDetector model in Python, analyzing the impact of topographical features (distance from the county center, etc.) on the CCD
- Visualized key values (e.g., index of URT and NDVI data, URT-NDVI coupling degree) using Python

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## **SKILLS & INTERESTS**

**Language:** Mandarin Chinese, English (TOFEL: 97)

**Programming Language:** Python (PyTorch), Java, C++, C

**Interest:** Basketball, Swimming, Tennis