Yuan Ning

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EDUCATION BACKGROUND

Henan University of Technology Zhengzhou, China
Bachelor of Science Jun 2026 (expected)
Major: Computer Science and Technology
GPA: 3.22/4.0

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, Multimodal Learning

RESEARCH EXPERIENCE

ECA-ModNet: An Efficient Unsound Wheat Grain Recognition Network for Edge Devices Zhengzhou, China
Project Leader | Advisor: Pengtao Lv | Henan University of Technology Dec 2024 – Present

- The ModFused-MBConv block is proposed, which operates using two parallel branches to extract features from different feature spaces. This design allows the block to incorporate the advantages of ViT, capturing long-range dependencies while maintaining good local structure awareness
- The MBConv block in the later stage of the baseline model is improved by introducing the ECA attention mechanism. Compared to the original SE block, it avoids channel dimensionality reduction while capturing cross-channel interactions in a more lightweight and effective way, thereby learning effective channel attention
- A lightweight and effective unsound wheat grain recognition network, ECA ModNet, is proposed, constructed based on the ModFused-MBConv block and the improved MBConv block. Performed extensive experiments on the CVPR public dataset to validate the effectiveness of the proposed network. Additionally, we conducted knowledge distillation experiments to explore the potential of this technique in unsound wheat grain recognition

An Improved Lightweight ConvNeXt for Rice Classification Zhengzhou, China
Research Assistant | Advisor: Pengtao Lv | Henan University of Technology Sep 2024 – Dec 2024

- Conducted comprehensive experiments on our proposed model CBAM-ParNeXt V1 and CBAM-ParNeXt V2, evaluating their performance at both the overall and subclass levels using a confusion matrix
- Conducted the training of other neural network models to validated our proposed model, including ConvNeXt-T, FasterNet, ParCNetV2-XT, Res2Net50, FastViT-T8, MobileNet V2, MobileNet V3 Tiny, ShuffleNet V2 1.5x, Swin-T, and InceptionNeXt-T
- Cleaned and organized the dataset, and performed data augmentation on the classified training data using techniques such as rotation, flipping, and cropping to enhance data diversity and improve the model's generalization ability

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

Research Assistant | Advisor: Xuning Qiao | Henan Polytechnic University Jun 2024 – Sep 2024

- Constructed a Bayesian network to probabilistically model the relationships between variables (e.g. rainfall, evapotranspiration, population density, etc.) and their states that affect ecosystem services
- Made sensitivity analysis of nodal factors using the constructed Bayesian network to identify the variables with the most significant impact on ecosystem service trade-offs, and further proposed the optimal subset of states for the key variables
- Leveraged mathematical packages (e.g. NumPy, etc.) in Python to improve the efficiency of tedious calculations during experiments; utilized visualization packages (e.g. Matplotlib, Seaborn, etc.) to effectively present experimental results.

How Well Does Street View Measure Actual Vision Experimental Comparison of Visual Measurements in Street View Imagery and Visual Perception Zhengzhou, China

Research Assistant | Advisor: Yi Zhang | Zhengzhou University Feb 2024 – May 2024

- Reproduced classical semantic segmentation models (e.g. U-Net, etc.) to evaluate their performance under different projection methods, including equirectangular, cubic, and fisheye projections. Investigated how projection distortions from 3D environments to 2D flattened street view images impact the accuracy of semantic segmentation and compared classification biases across different projection approaches.
- Processed experimental data using Python, including solid angle and ratio relative error. Employed visualization tools such as Matplotlib and Seaborn to intuitively present experimental results and analyze error trends between different measurement methods (pixel proportion vs. solid angle)
- Participated in the relative proportion comparison experiment by systematically adjusting the distance and elevation angle between the sphere and the observer. Measured the sphere's relative size variations under different Street View Imagery (SVI) projections (measured by pixel proportion) and solid angles (measured by steradian proportion).

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

Research Assistant | Advisor: Mingyang Cheng | Zhengzhou University Sep 2023 – Jan 2023

- Used the GeoDetector model through Python to investigate the factors affecting the coupling coordinated degree, analyzed the effect of various topographical features, distance from the county center, and other geographic factors on the coupling coordination degree (CCD)

SKILLS & INTERESTS

Language: Mandarin Chinese, English (TOFEL: 97)

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

Interest: Basketball, Swimming, Tennis