Zeyu Yan

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Education

Xidian University, Xi'an, China Sept. 2022 – Present

B.S. in Computer Science and Technology
Top-notch Student Training Program (TSTP) in Basic Disciplines, Ministry of Education of China

- **GPA**: 3.9/4.0 (Weighted Average: 92.9/100)
- **Ranking**: 3/30 (Top-notch Class), 10/470 (Department)
- **Core Courses**: Mathematical Logic (100), Computer Organization (99), Introduction to Computing and Programming (99), Probability Theory and Mathematical Statistics (97), Computational Complexity Theory (96), Computer Networks (96), Data Structures and Algorithms (95)

Publications

- **Zeyu Yan**, J. Zhang, et al. "DFYP: Dynamic CNN and ViT Fusion with Adaptive Sobel-Convolution for Enhanced Crop Yield Prediction." *ICML Workshop NewInML*, 2025, CCF-A, accepted.
- J. Zhang, **Zeyu Yan**, et al. "DFYP: A Dynamic Fusion Framework with Spectral Channel Attention and Adaptive Operator learning for Crop Yield Prediction." *IEEE Transactions on Geoscience and Remote Sensing (TGRS)*, JCR Q1, under review.
- **Zeyu Yan**, Y. Yao, et al. "LADSG: Label-Anonymized Distillation and Similar Gradient Substitution for Label Privacy in Vertical Federated Learning." *EAI International Conference on Collaborative Computing: Networking, Applications and Worksharing (CollaborateCom)*, 2025, CCF-C, accepted.

Research Experience

Crop Yield Estimation via Remote Sensing Imagery Sept. 2024 – Apr. 2025

Core Member Supervised by Dr. Juli Zhang

- Existing yield prediction models struggle with generalization due to limited adaptability to crop-specific spectral features, spatial heterogeneity across planting regions, and resolution variance in satellite imagery.
- Proposed the **DFYP** framework, which integrates:
  - A Resolution-Channel Attention (RCA) module to adaptively enhance vegetation-relevant spectral bands;
  - An Adaptive Operator Library (AOL) to select edge detectors tailored to year and region;
  - A dual-branch CNN-ViT architecture with separate loss functions and late-stage adaptive fusion.
- Achieved 5-20% accuracy improvement and enhanced cross-region/year robustness on Sentinel-2 and MODIS datasets, outperforming six recent baselines.

ISN Excellent Undergraduate Research Program Jun. 2024 – May 2025

Project Member Privacy-Preserving Federated Learning

- Label inference attacks pose a critical privacy threat in Vertical Federated Learning (VFL) by extracting sensitive label information from shared gradients. However, existing defenses typically protect either labels or gradients in isolation, making them ineffective against diverse attack types (passive, active, direct) or resulting in poor privacy-utility trade-offs.
- Developed **LADSG**, the first joint defense framework to simultaneously protect label and gradient channels:
  - Employed lightweight soft label distillation to anonymize label semantics while preserving performance;
  - Designed a fake gradient substitution mechanism with Mahalanobis and Euclidean distance constraints to simulate natural gradient patterns and resist detection;
  - Applied gradient norm clipping for anomaly detection to filter extreme gradient leakage.
- Reduced the success rates of all three attack types (passive, active, and direct) by 30-60% on six public datasets across image, finance, and healthcare domains, with less than 10% degradation in model accuracy.

Project Experience

Lingfei Innovation Program (Phase I) Jan. 2024 – Sept. 2024

Project Member Driver Monitoring System

- Developed a facial authentication module for an ARM-based driver monitoring system (DMS), targeting real-time recognition under hardware constraints.
- Designed a lightweight pipeline combining HOG+SVM for face detection, 68-point cascade regression for landmark localization, and a ResNet-based feature extractor for identity verification.
- Achieved 99% recognition accuracy at 20-25 FPS; successfully deployed in a commercial solution.

Lingfei Innovation Program (Phase II) July 2024 – Aug. 2024

Sole Developer Google Scholar Crawler

- Designed and implemented an intelligent crawler to automate citation data extraction from Google Scholar, addressing challenges of dynamic content rendering and anti-scraping mechanisms.
- Bypassed reCAPTCHA using audio challenge mode and integrated Tencent Cloud's speech recognition API to achieve stable and scalable CAPTCHA solving without human intervention.
- Parsed and structured article metadata (titles, citations, authors, journals) via XPath and hierarchical formatting, enabling efficient downstream analysis and visualization.

Student Innovation & Entrepreneurship Training Program July 2024 – Aug. 2024

Project Member "Hongci" — Let Debate Meet a Broader World

- Participated in the design and development of a WeChat mini program that integrates mock debates, argument resource sharing, and real-time interaction, targeting Mandarin-speaking debate communities.
- Responsible for developing core front-end and back-end modules of the mini program, including interface design, functional logic implementation, data management, and platform integration to enhance overall user experience.
- Collaborated within a cross-disciplinary team of 5 to conduct market research, user needs analysis, and user growth strategies; the project secured over 300 potential users and obtained a software copyright.

Honors and Awards

- National Scholarship, Ministry of Education of China Dec. 2024
- Honorable Mention, Mathematical Contest in Modeling (MCM), COMAP May 2025
- Honorable Mention, Mathematical Contest in Modeling (MCM), COMAP May 2024
- National-level Project, College Student Innovation & Entrepreneurship Training Program Sept. 2024
- Excellent Project Completion Award, ISN Key Laboratory Undergraduate Training Program June 2025
- Second Prize (Northwest Region), National Collegiate Software System Security Competition Mar. 2025
- Provincial First Prize, Contemporary Undergraduate Mathematical Contest in Modeling Dec. 2023
- Provincial Silver Award, China International College Students' Innovation Competition Aug. 2024
- Provincial Third Prize, National College Student Statistical Modeling Competition July 2025
- Provincial Third Prize, National College Student Statistical Modeling Competition July 2024
- Outstanding Communist Youth League Member, Xidian University May 2024

Miscellaneous

- Research Interests: **Computer Vision**, **Data Mining**, **Federated Learning**, **Deep Learning**
- Languages: English (CET-6 489/710), Mandarin (Native)
- Programming: Python, C/C++, Java, MATLAB
- Blog: `https://onef1shy.github.io/`