

# Xiaoyan Zhang

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## EDUCATION

### Anhui University

*Bachelor of Engineering in Artificial Intelligence*

Hefei, China

2021 - 2025(expected)

- GPA: 4.33/5.0, Rank: 1/251
- Coursework: Advanced Mathematics A(97), Linear Algebra A(95), Probability Theory and Mathematical Statistics A(99), Discrete Mathematics(94), Java Technology and Its Applications (Practice)(100), Python Programming(99), Machine Learning(99), Digital Image Processing (bilingual)(98), Natural Language Processing(97), Experiments in Computer Vision(97), Software Project(96)

### Purdue University

*Intern in Electrical and Computer Engineering*

West Lafayette, USA

May. 2024 - Present

- Laboratory: Video and Image Processing Laboratory (VIPER)
- Advisor: Fengqing Zhu and Edward J. Delp

### Nanyang Technological University

*2023 Summer School Program*

Singapore, Singapore

Jun. 2023 - Aug. 2023

- Theme: Machine Learning & Deep Learning Methodologies
- Advisor: Chew Soon Beng

## PUBLICATIONS

- [1] **Learning Frequency and Structure in UDA for Medical Object Detection**  
**Zhang Xiaoyan\***, Liwen Wang\*, Guannan He, Ying Tan, Shengli Li, Bin Pu, Zhe Jin, Wen Sha, Xingbo Dong.  
*Chinese Conference on Pattern Recognition and Computer Vision (PRCV)*, 2024.
- [2] **Validating Privacy-Preserving Face Recognition under a Minimum Assumption**  
Zhang Hui, Dong Xingbo, Lai YenLung, Zhou Ying, **Zhang Xiaoyan**, Lv Xingguo, Jin Zhe, Li Xuejun.  
*IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2024.
- [3] **MFP3D: Monocular Food Portion Estimation Leveraging 3D Point Clouds (Oral)**  
Jinge Ma, **Xiaoyan Zhang**, Gautham Vinod, Siddeshwar Raghavan, Jiangpeng He, Fengqing Zhu.  
*International Conference on Pattern Recognition (ICPR) MADiMa workshop*, 2024.
- [4] **Single Source Domain Generalization for Palm Biometrics** (Under review)  
Congcong Jia, Xingbo Dong, Yen Lung Lai, Andrew Beng Jin Teoh, Ziyuan Yang, **Xiaoyan Zhang**, Liwen Wang, Zhe Jin, Lianqiang Yang. *Pattern Recognition*, 2024.
- [5] **On the Duality of Luminance: A Direct Perception Approach for Low-Light Image Enhancement**  
(Under review) Xingguo Lv, Xingbo Dong, **Xiaoyan Zhang**, Jiewen Yang, Zhe Jin, Xuejun Li, Jean-Luc Dugelay.  
*IEEE Transactions on Multimedia (TMM)*, 2024.
- [6] **Long-Tailed Continual Learning For Visual Food Recognition** (Under review)  
Jiangpeng He, **Xiaoyan Zhang**, Luotao Lin, Jack Ma, Heather A. Eicher-Miller, Fengqing Zhu.  
*IEEE Transactions on Multimedia (TMM)*, 2024.

## SELECTED PROJECTS

### Long-tail Continual Learning in Food Classification, Purdue University

Aug. 2024 – Sep. 2024

*Research Intern*

Advisor: Fengqing Zhu, Edward J. Delp

- Introduced three new long-tailed benchmark datasets based on VFN186, which reflect the food consumption patterns of different populations.
- Conducted extensive experiments on all long-tailed continual learning benchmarks for food recognition.

### Food Portion Estimation, Purdue University

Jun. 2024 – Jul. 2024

*Research Intern*

Advisor: Fengqing Zhu, Edward J. Delp

- Designed a Feature Extraction Module that extracts and concatenates features from both 3D point cloud data and 2D RGB images.
- Developed MFP3D, an integrated system for food portion estimation, including a 3D Reconstruction Module, a Feature Extraction Module, and a Portion Regression Module.
- Applied MFP3D to the MetaFood3D dataset for accurate estimation of food volume and energy content.

**Unsupervised Domain Adaptation for Medical Object Detection, Anhui University** Jan. 2024 – Apr. 2024

*Research Assistant*

*Advisor: Zhe Jin, Xingbo Dong*

- Synchronized detection in source and target domains by aligning topological representation.
- Employed ResNet-101 as the feature extractor and FCOS as the detector. Implemented the designed model FS-UDA on two datasets of cardiac standard views, each of which includes data from two hospitals.
- Validated the effectiveness of FDA and OSA. Performed t-SNE visualization of ResNet-101-based features, and clear separation of similar categories demonstrated the effectiveness of FS-UDA to distinguish organs.

**Validation of Privacy-Preserving Face Recognition, Anhui University** Jun. 2023 – Nov. 2023

*Research Assistant*

*Advisor: Zhe Jin, Xingbo Dong*

- Constructed the query-efficient reconstruction model, and used it for PPFR evaluation.
- Evaluated the result by developing a privacy leakage evaluation scale, including reconstruction visual quality analysis, visual privacy analysis, and identity privacy analysis.
- Conducted ablation experiments to obtain privacy validation results. Found that PSC and REI modules significantly contribute to the similarity between our results and targets.

**Applications of Machine Learning and Deep Learning, NTU** Jul. 2023 - Aug. 2023

*Undergraduate Visitor*

*Advisor: Chew Soon Beng, Kuicai Dong*

- Learned the basic concepts and algorithms of machine learning, and classic methods of deep learning, including data processing and mining, computer vision, natural language processing, etc.
- Participated in the data processing and analysis project, analyzed the public bicycle dispatching situation of BikeShare, found the influencing factors of vehicle use, and formulated the optimal vehicle allocation strategy.

## TEACHING EXPERIENCE

**Teaching Assistant of Introduction to Artificial Intelligence, Anhui University** 2024 Fall

**Teaching Assistant of Java Technology and Its Application (Practice), Anhui University** 2024 Fall

**Academic Peer Mentor, Anhui University** May. 2023 – May. 2024

## AWARDS AND HONORS

**National Scholarship, Ministry of Education of the People's Republic of China** 2024

**Honorable Mentioned** in the Interdisciplinary Contest in Modeling, *the Consortium for Mathematics and Application* 2024

**Outstanding Mentioned** in the Second "Huashu Cup" International Mathematical Contest in Modeling, *Big Data and Mathematical Modeling Committee of China Society for Future Studies* 2024

**Song Qingling Future Grant for Discipline Focus Students, The China Song Qingling Foundation** 2024

**Pacemaker to Merit Student, Anhui University** 2022, 2023, 2024

**Merit Student, Anhui University** 2022, 2023, 2024

**Provincial Second Prize** in China Undergraduate Mathematical Contest in Modeling, *China Society for Industrial and Applied Mathematics* 2023

**Excellent Student Scholarship, Anhui University** 2023

**Academic Science and Technology Scholarship, Anhui University** 2023

**Provincial Silver Award** in China International College Students' Innovation Competition, *Ministry of Education of Anhui Province* 2023

**National Encouragement Scholarship, Ministry of Education of Anhui Province** 2022