HONGYE XU

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CPT eligible from Fall 2026 through Spring 2027 | Expected Ph.D. graduation: 08/2027

SUMMARY

Ph.D. candidate in Imaging Science at Rochester Institute of Technology (RIT), working on computer vision, representation learning, continual learning, and efficient adaptation of foundation-style visual models. My research studies representation drift, distribution/prototype transport, failure-aware adaptation, and PEFT mechanisms for robust model behavior under evolving visual data. First-author publications at ICLR and CVPR, with additional publications at ICCV and *Briefings in Bioinformatics*; experienced with PyTorch/timm/Transformers, ViT/ResNet/U-Net models, and reproducible large-scale visual benchmark pipelines.

EDUCATION

Rochester Institute of Technology — Aug. 2021 – Present
Ph.D. Candidate, Imaging Science — *Rochester, NY, USA*

Rutgers University — Sep. 2018 – Jan. 2021
M.S. in Statistics (Data Science) — *New Brunswick, NJ, USA*

Jilin University — Sep. 2011 – Jul. 2015
B.S. in Mathematics & Applied Mathematics — *Changchun, Jilin, China*

RESEARCH EXPERIENCE (SELECTED)

Failure-Aware Residual Adaptation for PEFT Continual Vision Models — Jan. 2026 – May. 2026

- Diagnosed failure modes of frozen-backbone PEFT systems under evolving visual data, analyzing how old-aligned directions, semantic overlap, and adapter capacity affect representation reuse and final predictions.
- Built a two-stream primary/correction adapter framework with held-out failure mining, failure-aware classifier alignment, and uncertainty-gated routing for task-free inference; improved over TUNA by +1.06/+0.39 pp on CIFAR-100 and +1.08/+0.30 pp on ImageNet-R in $A_{\text{last}}/A_{\text{inc}}$; under review at **NeurIPS 2026**.

Online Bidirectional Prototype Transport for Evolving Representations — May. 2025 – Sep. 2025

- Developed online old→new/new→old transport for evolving feature distributions, reducing cross-space inconsistency in prototype/Gaussian statistics as visual representations change over time.
- Improved AdaGauss A_{last} on CIFAR-100 by +3.8/+3.6 pp, TinyImageNet by +2.5/+2.7 pp, and ImageNet-100 by +1.6/+1.2 pp under 10/20-task settings; culminating in a first-author paper at **ICLR 2026**.

Revisiting Prototype Rehearsal for Exemplar-Free Continual Learning — Sep. 2025 – Nov. 2025

- Designed feature-space synthesis and adaptive class balancing for robust visual recognition under distribution shift, improving decision-boundary coverage without image replay or exemplar storage.
- Improved prior-best A_{last} by +1.5 pp on CIFAR-100, +1.6/+6.9/+7.9 pp on TinyImageNet, +1.3 pp on ImageNet-100, and +2.0 pp on CUB-200; led to a first-author paper at **CVPR 2026 Findings**.

Large-Scale Benchmarking for Cell Segmentation + Pretrained Model Gallery — Aug. 2022 – Jul. 2024

- Built a benchmark for nuclei and whole-cell segmentation across light microscopy and fluorescence settings, and developed GeneSegNet, a U-Net-based framework integrating RNA spatial and imaging cues.
- Reached 73.64% image IoU, 79.13% clustering reproducibility, and 97.5% gene–gene correlation on real data; yielding a co-first-author paper in **Briefings in Bioinformatics** (2024).

SELECTED PUBLICATIONS & SERVICE

- **H. Xu** and B. Krawczyk, *Two-Way Is Better Than One: Bidirectional Alignment with Cycle Consistency for Exemplar-Free Class-Incremental Learning.* **ICLR**, 2026.
- **H. Xu** and B. Krawczyk, *Revisiting Prototype Rehearsal for Exemplar-Free Continual Learning: Manifold-Aware Boundary Sampling with Adaptive Class-Balanced Loss.* **CVPR Findings**, 2026.
- Y. Wang, J. Zhao, **H. Xu**, et al., *A Systematic Evaluation of Computational Methods for Cell Segmentation.* **Briefings in Bioinformatics**, 2024. [SegGal]
- A. Naghizadeh, **H. Xu**, et al., *Semantic Aware Data Augmentation for Cell Nuclei Microscopical Images with Artificial Neural Networks.* **ICCV**, 2021.
- **Service:** Gold Reviewer Award, **ICML 2026**.

SKILLS

Programming: Python, SQL, Java, R, Bash, LaTeX **ML / DL:** PyTorch, TensorFlow, Transformers, timm, ViT, ResNet/U-Net, PEFT/LoRA/Adapters, Computer Vision, Representation Learning, Multimodal Learning, Continual Learning **Tools / Systems:** Linux, Git, CUDA, Spark, MySQL, MongoDB, Oracle DBMS