

RUINING DENG

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EDUCATION

Vanderbilt University	Nashville, TN
Doctor of Philosophy, Computer Science, GPA: 3.89/4.0	November 2024
Thesis topic: <i>Knowledge-infused Efficient Learning for Computational Pathology</i>	
Advisor: Dr. Yuankai Huo	
Vanderbilt University	Nashville, TN
Master of Science, Computer Science, GPA: 3.96/4.0	December 2022
China University of Mining and Technology	Beijing, China
Bachelor of Science, Information Engineering	June 2019
GPA: 3.99/4.0 (Core GPA: 4.0/4.0), Rank: 1/31	

AWARDS AND HONORS

- Early Stage Investigator (ESI) Travel Award, KPMP Jan 2025, Aug 2026
- CTP Project Award, Weill Cornell Medicine June 2026
- Doctoral Dissertation Award, Association for Pathology Informatics May 2026
- Early Stage Investigator (ESI) Travel Award, OKRA, UAB Mar 2026
- Distinguished Reviewer Award (Platinum Level, top 8), IEEE TMI Dec 2025
- Conference Travel Grant, Medical Image with Deep Learning July 2025
- CTSC Pilot Award, Weill Cornell Medicine June 2025
- Outstanding Graduate Award (top 2%), Vanderbilt Graduate School May 2025
- Gold-level Distinguished Reviewer Certificate (top 20), IEEE TMI Oct 2024
- C.F. Chen Best Paper Runner-up, Vanderbilt May 2024
- Cornell NYC AIMI Fellowship, Weill Cornell Medicine Apr 2024
- All-Conference Best Student Paper Award Finalist, SPIE Medical Imaging Feb 2024
- Student Conference Travel Grant, SPIE Medical Imaging Feb 2023
- Graduate School Travel Award, Vanderbilt Feb 2022, Feb 2023, Feb 2024
- First-class Scholarship of the University (top 2%), CUMTB Nov 2016, Nov 2017
- Outstanding Graduate Award (top 4%), CUMTB June 2019
- Outstanding Graduation Thesis Award (top 8%), CUMTB June 2019

ACADEMIC POSITIONS

Weill Cornell Medicine	New York, NY
• Instructor of Artificial Intelligence (Advisor: Mert R. Sabuncu)	Nov 2024 – Present
Vanderbilt University	Nashville, TN

- AI scholar, Vanderbilt Lab for Immersive AI Translation May 2024 – Nov 2024
- Student, Vanderbilt Institute for Surgery and Engineering Mar 2020 – Nov 2024
- Ph.D. Student, Biomedical Data Representation and Learning Lab Mar 2020 – Nov 2024

RESEARCH EXPERIENCE

- Vanderbilt University** Nashville, TN
- Research Assistant Mar 2020 – Nov 2024
- Guangdong Provincial Cardiovascular Institute** Guangzhou, China
- Research Staff June 2019 – Aug 2019
- University of Notre Dame** South Bend, IN
- Visiting Student (Advisor: Dr. Yiyu Shi) Jul 2018 – Sep 2018

TEACHING EXPERIENCE

- Aalto University**
- Guest Lecturer, AI in Health Technologies Fall 2025
- Weill Cornell Medicine**
- Guest Lecturer, BME MS AI in Medical Imaging Summer 2025
- Cornell Tech**
- Guest Lecturer, CS 5304 Data Science in the Wild Spring 2025
- Vanderbilt University** Nashville, TN
- Guest Lecturer, DS-5660 Deep Learning Fall 2024
 - Guest Lecturer, CS-4267 Deep Learning Spring 2024
 - Language Program Staff Member, Vanderbilt Center of Language Fall 2021 – Fall 2023
 - Teaching Assistant, CS-3891 Deep Learning Spring 2021
 - Teaching Assistant, DS-5660 Modeling and Machine Learning II Fall 2020
 - Grader, EECE-5353-01 Image Processing Fall 2020

PROFESSIONAL EXPERIENCE

- Roche** Santa Clara, CA
- Imaging Scientist Intern (Supervisor: Dr. Yao Nie) May 2023 – Aug 2023
- Bridge Investment Group** Charlotte, NC
- Software Engineer Intern May 2020 – Aug 2020

PUBLICATION

Journal (First & corresponding author)

- [J26] Cheng, F., Gong, K., Liu, S., Zhao, B., Zhu, J., Zhu, Z., ... & **Deng, R.** (2026). *PathLang: A Language-Centered Benchmark for Vision-Language Models in Computational Pathology*. Under review.
- [J25] Guo, Z., Saluja, R., Shi, T., Yao, T., Liu, Q., Zhu, J., ... & **Deng, R.** (2026). *From Classification to Cross-Modal Understanding: Leveraging Vision-Language Models for Fine-Grained Renal Pathology*. Machine Learning for Biomedical Imaging, 2026, 903-932.
- [J24] **Deng, R.**, Zhu, J., Xiong, J., Cui, C., Yao, T., Guo, J., ... & Huo, Y. (2025). *IRS: Incremental Relationship-guided Segmentation for Digital Pathology*. Under review.
- [J23] **Deng, R.**, Yao, T., Tang, Y., Guo, J., Lu, S., Xiong, J., ... & Huo, Y. (2026). *KPIs 2024 Challenge: Advancing Glomerular Segmentation from Patch-to Slide-Level*. Medical Image Analysis, 104234.
- [J22] **Deng, R.**, Cui, C., Remedios, L. W., Bao, S., Womick, R. M., Chiron, S., ... & Huo, Y. (2024). *Cross-scale Multi-instance Learning for Pathological Image Diagnosis*. Medical Image Analysis, 2024 103124.
- [J21] **Deng, R.**, Liu, Q., Cui, C., Yao, T., Long, J., Asad, Z., ... & Huo, Y. (2023). *Omni-seg: A scale-aware dynamic network for renal pathological image segmentation*. IEEE Transactions on Biomedical Engineering, 2023. 70(9): p. 2623-2644.
- [J20] **Deng, R.**, Yang, H., Jha, A., Lu, Y., Chu, P., Fogo, A. B., & Huo, Y. (2021). *Map3D: Registration-Based Multi-Object Tracking on 3D Serial Whole Slide Images*. IEEE transactions on medical imaging, 40(7), 1924-1933.

Journal (Co-author)

- [J19] Xu, G., Duan, Y., Xia, J., **Deng, R.**, Jin, W., & Shi, Y. (2026). *Patient-Conditioned Adaptive Offsets for Reliable Diagnosis across Subgroups*. IEEE Transactions on Medical Imaging.
- [J18] Zhu, J., **Deng, R.**, Guo, J., Yao, T., Lu, S., Qu, C., ... & Huo, Y. (2026). *A comprehensive survey of computer vision methods for spatial transcriptomics*. Briefings in Bioinformatics, 27(3), bbag255.
- [J17] Li, X., Cui, C., **Deng, R.**, Tang, Y., Liu, Q., Yao, T., ... & Huo, Y. (2025). *Fine-grained multiclass nuclei segmentation with molecular empowered all-in-SAM model*. Journal of Medical Imaging, 12(5), 057501-057501.
- [J16] Wang, Y., Yang, H., **Deng, R.**, Huo, Y., Liu, Q., Shyr, Y., & Zhao, S. (2025). *stImage: a versatile framework for optimizing spatial transcriptomic analysis through customizable deep histology and location informed integration*. Briefings in Bioinformatics, 26(5), bbaf429.
- [J15] Zhu, J., **Deng, R.**, Guo, J., Yao, T., Xiong, J., Qu, C., ... & Huo, Y. (2025). *Img2ST-Net: efficient high-resolution spatial omics prediction from whole-slide histology images via fully convolutional image-to-image learning*. Journal of Medical Imaging, 12(6), 061410-061410.

- [J14] Xiong, J., **Deng, R.**, Yue, J., Lu, S., Guo, J., Lionts, M., ... & Huo, Y. (2025). *ZeroReg3D: a zero-shot registration pipeline for 3D consecutive histopathology image reconstruction*. Journal of Medical Imaging, 12(4), 044002-044002.
- [J13] Cui, C., Zheng, X., **Deng, R.**, Liu, Q., Yao, T., Wilson, K. T., ... & Huo, Y. (2025). *Quantitative benchmarking of anomaly detection methods in digital pathology images*. Machine Learning: Health, 1(1), 010502.
- [J12] Guo, J., Zimmer-Dauphinee, J. R., Nieusma, J. M., Lu, S., Liu, Q., **Deng, R.**, ... & Huo, Y. (2025). *DeepAndes: A Self-Supervised Vision Foundation Model for Multi-Spectral Remote Sensing Imagery of the Andes*. IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing.
- [J11] Yue, J., Yao, T., **Deng, R.**, Lu, S., Guo, J., Liu, Q., ... & Huo, Y. (2024). *GloFinder: AI-empowered QuPath Plugin for WSI-level Glomerular Detection, Visualization, and Curation*. Journal of Pathology Informatics, 17, 100433.
- [J10] Yu, L., Yin, M., **Deng, R.**, Liu, Q., Yao, T., Cui, C., ... & Huo, Y. (2024). *Glo-In-One-v2: Holistic Identification of Glomerular Cells, Tissues, and Lesions in Human and Mouse Histopathology*. Journal of Medical Imaging, 12(6), 061406-061406.
- [J9] Remedios, L. W., Bao, S., Remedios, S. W., Lee, H. H., Cai, L. Y., Li, T., ... **Deng, R.**, ... & Landman, B. A. (2024). *Data-driven nucleus subclassification on colon hematoxylin and eosin using style-transferred digital pathology*. Journal of Medical Imaging, 11(6), 067501-067501.
- [J8] Guo, J., Lu, S., Cui, C., **Deng, R.**, Yao, T., Tao, Z., ... & Huo, Y. (2025). *Evaluating cell AI foundation models in kidney pathology with human-in-the-loop enrichment*. Communications Medicine, 5(1), 495.
- [J7] Xiong, J., Nguyen, E. H., Liu, Y., **Deng, R.**, Tyree, R. N., Correa, H., ... & Huo, Y. (2025). *Circle Representation for Medical Instance Object Segmentation*. Machine Learning for Biomedical Imaging, 2025, 545-558.
- [J6] Yao, T., Rheault, F., Cai, L. Y., Nath, V., Asad, Z., Newlin, N., ... **Deng, R.**, ... & Huo, Y. (2024). *Robust fiber orientation distribution function estimation using deep constrained spherical deconvolution for diffusion-weighted magnetic resonance imaging*. Journal of Medical Imaging, 11(1), 014005-014005.
- [J5] Yao, T., Qu, C., Long, J., Liu, Q., **Deng, R.**, Tian, Y., ... & Huo, Y. (2022). *Compound Figure Separation of Biomedical Images: Mining Large Datasets for Self-supervised Learning*. The journal of machine learning for biomedical imaging, 1.
- [J4] Nguyen, E. H., Yang, H., **Deng, R.**, Lu, Y., Zhu, Z., Roland, J. T., ... & Huo, Y. (2021). *Circle representation for medical object detection*. IEEE transactions on medical imaging, 41(3), 746-754.
- [J3] Liu, Q., Gaeta, I. M., Zhao, M., **Deng, R.**, Jha, A., Millis, B. A., ... & Huo, Y. (2021). *ASIST: annotation-free synthetic instance segmentation and tracking by adversarial simulations*. Computers in biology and medicine, 134, 104501.
- [J2] Huo, Y., **Deng, R.**, Liu, Q., Fogo, A. B., & Yang, H. (2021). *AI applications in renal*

- pathology*. Kidney international, 99(6), 1309-1320.
- [J1] Jha, A., Yang, H., **Deng, R.**, Kapp, M. E., Fogo, A. B., & Huo, Y. (2021). *Instance segmentation for whole slide imaging: end-to-end or detect-then-segment*. Journal of Medical Imaging, 8(1), 014001-014001.

Highly Selective Conference

- [C85] Liu, F., Saluja, R., Kwak, S., Wang, R., **Deng, R.**, Kim, H., ... & Sabuncu, M. R. (2026). *MAdam: Metric-Aware Multi-Objective Adam*. In Advances in Neural Information Processing Systems (NeurIPS).
- [C84] Zhao, L., Shi, T., Reisenbüchler, D., He, X., Zhu, J., Yao, T., ... & **Deng, R.** (2026). *MORI-Seg: Learning Morphological Geometry for Instance Segmentation without Instance Annotations*. In International Conference on Medical Image Computing and Computer-Assisted Intervention. **(Early accept, top 9%, Oral presentation)**
- [C83] Nizam, N. B., Liu, F., Kwak, S., Nguyen, M., **Deng, R.**, & Sabuncu, M. R. (2026). *ShapKO: Shapley-Adaptive Modality Knockout for Robust Multimodal Learning*. In International Conference on Medical Image Computing and Computer-Assisted Intervention.
- [C82] Saluja, R., Cihangir, A., **Deng, R.**, Paetzold, J. C., Liu, F., & Sabuncu, M. R. (2026). *BackSplit: The Importance of Sub-dividing the Background in Biomedical Lesion Segmentation*. In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition.
- [C81] Reisenbüchler, D., **Deng, R.**, Matek, C., Feuerhake, F., & Merhof, D. (2025). *Top-Down Attention-Based Multiple Instance Learning for Whole Slide Image Analysis*. In International Conference on Medical Image Computing and Computer-Assisted Intervention (pp. 651-660). Springer.
- [C80] Zhu, J., **Deng, R.**, Yao, T., Xiong, J., Qu, C., Guo, J., ... & Huo, Y. (2025). *ASIGN: An Anatomy-aware Spatial Imputation Graphic Network for 3D Spatial Transcriptomics*. In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition.
- [C79] **Deng, R.**, Liu, Q., Cui, C., Yao, T., Xiong, J., Bao, S., ... & Huo, Y. (2024, October). *HATs: Hierarchical Adaptive Taxonomy Segmentation for Panoramic Pathology Image Analysis*. In International Conference on Medical Image Computing and Computer-Assisted Intervention (pp. 155-166). Cham: Springer Nature Switzerland.
- [C78] **Deng, R.**, Liu Q., Cui C., Yao T., Yue J., Xiong J., Yu L., Wu Y., ... & Huo, Y. (2024). *PrPSeg: Universal Proposition Learning for Panoramic Renal Pathology Segmentation*. In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (pp. 11736-11746).
- [C77] **Deng, R.**, Li, Y., Li, P., Wang, J., Remedios, L. W., Agzamkhodjaev, S., ... & Huo, Y. (2023, October). *Democratizing Pathological Image Segmentation with Lay Annotators via Molecular-Empowered Learning*. In International Conference on Medical Image Computing and Computer-Assisted Intervention (pp. 497-507). Cham: Springer Nature Switzerland.

- [C76] Cui, C., Liu, H., Liu, Q., **Deng, R.**, Asad, Z., Wang, Y., ... & Huo, Y. (2022, September). *Survival Prediction of Brain Cancer with Incomplete Radiology, Pathology, Genomic, and Demographic Data*. In International Conference on Medical Image Computing and Computer-Assisted Intervention (pp. 626-635). Cham: Springer Nature Switzerland.
- [C75] Liu, Q., Louis, P. C., Lu, Y., Jha, A., Zhao, M., **Deng, R.**, ... & Huo, Y. (2021). *Simtriplet: Simple triplet representation learning with a single gpu*. In Medical Image Computing and Computer Assisted Intervention–MICCAI 2021: 24th International Conference, Strasbourg, France, September 27–October 1, 2021, Proceedings, Part II 24 (pp. 102-112). Springer International Publishing.
- [C74] Yang, H., **Deng, R.**, Lu, Y., Zhu, Z., Chen, Y., Roland, J. T., ... & Huo, Y. (2020). *CircleNet: Anchor-free glomerulus detection with circle representation*. In Medical Image Computing and Computer Assisted Intervention–MICCAI 2020: 23rd International Conference, Lima, Peru, October 4–8, 2020, Proceedings, Part IV 23 (pp. 35-44). Springer International Publishing.

Full Length Conference (First & corresponding author)

- [C73] Zhu, Z., Zhu, J., Liu, F., Yao, T., Xu, G., Cannon, J., ... & **Deng, R.** (2026). *Benchmarking Active Spot Selection for Cost-Efficient Spatial Transcriptomics*. arXiv preprint arXiv:2609.27208.
- [C72] Hasko, G., Saluja, R., Shi, T., Zhao, L., Yang, Y., Reisenbuechler, D., ... & **Deng, R.** (2026). *Seeing Abnormal from Normal: Glomerular Abnormality in Representations of Normal Renal Morphology*. arXiv preprint arXiv:2609.19444.
- [C71] Wei, E., Jiang, B., Zhu, Y., Reisenbüchler, D., Ikemura, K., Salvatore, S., ... & **Deng, R.** (2026). *StainBridge: Stain-Aware Pairwise Registration of Serial Renal Biopsy Whole-Slide Images Across Structural and Immunohistochemical Stains*. arXiv preprint arXiv:2609.17090.
- [C70] Fang, H., Reisenbüchler, D., Ikemura, K., Sabuncu, M., Yang, Y., & **Deng, R.** (2026). *CoFi: a fast coarse-to-fine few-shot pipeline for glomerular basement membrane segmentation*. In Medical Imaging 2026: Digital and Computational Pathology (Vol. 13932, pp. 218-225). SPIE.
- [C69] Zhao, L., Yang, Y., Zhu, Y., Guo, J., Yang, H., Huo, Y., Simonson, P. D., Ikemura, K., Sabuncu, M. R., Yang, Y., & **Deng, R.** (2026). *DyMorph-B2I: dynamic and morphology-guided binary-to-instance segmentation for renal pathology*. In Medical Imaging 2026: Digital and Computational Pathology (Vol. 13932, pp. 208-217). SPIE.
- [C68] Guo, Z., Saluja, R., Fang, H., Yao, T., Liu, Q., Huo, Y., Liechty, B., Pisapia, D. J., Ikemura, K., Sabuncu, M. R., Yang, Y., & **Deng, R.** (2026). *Glo-VLMs: leveraging vision-language models for fine-grained diseased glomerulus classification*. In Medical Imaging 2026: Digital and Computational Pathology (Vol. 13932, pp. 54-61). SPIE.
- [C67] Shi, T., He, X., Fang, H., Ikemura, K., Sabuncu, M. R., Yang, Y., & **Deng, R.** (2026). *M³-GloDets: Multi-region and multi-scale analysis of fine-grained diseased glomerular*

- detection*. In Medical Imaging 2026: Digital and Computational Pathology (Vol. 13932, pp. 258-266). SPIE.
- [C66] **Deng, R.**, Yang, Y., Pisapia, D. J., Liechty, B., Zhu, J., Xiong, J., ... & Sabuncu, M. R. (2025). *CASC-AI: Consensus-aware Self-corrective Learning for Cell Segmentation with Noisy Labels*. In International Conference on Medical Imaging with Deep Learning 2025. **(Oral presentation)**
- [C65] **Deng, R.**, Shaikh, N., Shannon, G., & Nie, Y. (2024, April). *Cross-modality Attention-based Multimodal Fusion for Non-small Cell Lung Cancer (NSCLC) Patient Survival Prediction*. In Medical Imaging 2024: Digital and Computational Pathology (Vol. 12933, pp. 46-50). SPIE. **(SPIE Medical Imaging All-Conference Best Student Paper Award Finalist)**
- [C64] Li, X., **Deng, R.**, Tang, Y., Bao, S., Yang, H., & Huo, Y. (2024, April). *Leverage Weakly Annotation to Pixel-wise Annotation via Zero-shot Segment Anything Model for Molecular-empowered Learning*. In Medical Imaging 2024: Digital and Computational Pathology (Vol. 12933, pp. 133-139). SPIE. **(Co-first author, SPIE Medical Imaging All-Conference Best Student Paper Award Finalist)**
- [C63] Hu, F., **Deng, R.**, Bao, S., Yang, H., & Huo, Y. (2024, April). *Multi-scale Multi-site Renal Microvascular Structures Segmentation for Whole Slide Imaging in Renal Pathology*. In Medical Imaging 2024: Digital and Computational Pathology (Vol. 12933, pp. 310-316). SPIE. **(Co-first author)**
- [C62] **Deng, R.**, Cui, C., Liu, Q., Yao, T., Remedios, L. W., Bao, S., ... & Huo, Y. (2023). *Segment anything model (sam) for digital pathology: Assess zero-shot segmentation on whole slide imaging*. In International Conference on Medical Imaging with Deep Learning Short Paper Track. **(Co-first author)**
- [C61] Leng, H., **Deng, R.**, Asad, Z., Womick, R. M., Yang, H., Wan, L., & Huo, Y. (2023, April). *An accelerated pipeline for multi-label renal pathology image segmentation at the whole slide image level*. In Medical Imaging 2023: Digital and Computational Pathology (Vol. 12471, pp. 174-179). SPIE. **(Co-first author)**
- [C60] Li, P., **Deng, R.**, & Huo, Y. (2023, April). *An end-to-end pipeline for 3D slide-wise multi-stain renal pathology registration*. In Medical Imaging 2023: Digital and Computational Pathology (Vol. 12471, pp. 96-101). SPIE. **(Co-first author)**
- [C59] **Deng, R.**, Liu, Q., Cui, C., Asad, Z., & Huo, Y. (2022, December). *Single Dynamic Network for Multi-label Renal Pathology Image Segmentation*. In International Conference on Medical Imaging with Deep Learning (pp. 304-314). PMLR.
- [C58] **Deng, R.**, Cui, C., Remedios, L. W., Bao, S., Womick, R. M., Chiron, S., ... & Huo, Y. (2022, September). *Cross-Scale Attention Guided Multi-instance Learning for Crohn's Disease Diagnosis with Pathological Images*. In International Workshop on Multiscale Multimodal Medical Imaging (pp. 24-33). Cham: Springer Nature Switzerland.
- [C57] **Deng, R.**, Yang, H., Asad, Z., Zhu, Z., Wang, S., Wheless, L. E., ... & Huo, Y. (2022, April). *Dense multi-object 3D glomerular reconstruction and quantification on 2D serial section*

- whole slide images*. In Medical Imaging 2022: Digital and Computational Pathology (Vol. 12039, pp. 83-90). SPIE.
- [C56] **Deng, R.**, Liu, Q., Bao, S., Jha, A., Chang, C., Millis, B. A., ... & Huo, Y. (2021). *CaCL: Class-Aware Codebook Learning for Weakly Supervised Segmentation on Diffuse Image Patterns*. In Deep Generative Models, and Data Augmentation, Labelling, and Imperfections: First Workshop, DGM4MICCAI 2021, and First Workshop, DALI 2021, Held in Conjunction with MICCAI 2021, Strasbourg, France, October 1, 2021, Proceedings 1 (pp. 93-102). Springer International Publishing.

Full Length Conference (Co-author)

- [C55] Wu, R., Guo, J., **Deng, R.**, Wang, Y., Zhao, S., Yang, H., & Huo, Y. (2026). *Comprehensive Evaluation and Fine-Tuning of Foundational Cell Nuclei Segmentation Models in Renal Pathology*. arXiv preprint arXiv:2610.07711.
- [C54] Wang, R., Guo, J., Lu, S., **Deng, R.**, Lu, Z., Zhu, Y., ... & Huo, Y. (2026, April). *Evaluating new AI cell foundation models on challenging kidney pathology cases unaddressed by previous foundation models*. In Medical Imaging 2026: Digital and Computational Pathology (Vol. 13932, pp. 69-78). SPIE.
- [C53] Zhu, J., **Deng, R.**, Guo, J., Yao, T., Qu, C., Xiong, J., ... & Huo, Y. (2025). *SCR2-ST: Combine Single Cell with Spatial Transcriptomics for Efficient Active Sampling via Reinforcement Learning*. In International Conference on Medical Imaging with Deep Learning (MIDL), 2026. **(Spotlight presentation)**
- [C52] Yang, Y., Guo, J., **Deng, R.**, Zhu, J., Lu, Z., Qu, C., ... & Huo, Y. (2026). *Explainable Pathomics Feature Visualization via Correlation-aware Conditional Feature Editing*. In International Conference on Medical Imaging with Deep Learning (MIDL), 2026. **(Oral presentation)**
- [C51] Li, X., Zhu, Y., **Deng, R.**, Wei, W. Q., Wang, Y., Zhao, S., ... & Huo, Y. (2026, April). *MedFoundationHub: a lightweight and secure toolkit for deploying medical vision language foundation models*. In Medical Imaging 2026: Image Perception, Observer Performance, and Technology Assessment (Vol. 13928, pp. 238-247). SPIE.
- [C50] Zhu, Y., Xiong, J., **Deng, R.**, Wang, Y., Wang, Y., Zhao, S., ... & Huo, Y. (2026, April). *How close are we? Limitations and progress of AI models in Banff lesion scoring*. In Medical Imaging 2026: Digital and Computational Pathology (Vol. 13932, pp. 6-15). SPIE.
- [C49] Zhu, J., **Deng, R.**, Guo, J., Yao, T., Qu, C., Xiong, J., ... & Huo, Y. (2026). *DUET: Dual-Paradigm Adaptive Expert Triage with Single-cell Inductive Prior for Spatial Transcriptomics Prediction*. In International Workshop on Medical Imaging Analysis for Spatial Omics (MISO), MICCAI 2026 (LNCS 17252). Springer Nature Switzerland.
- [C48] Li, M., Xiong, J., **Deng, R.**, Yao, T., Tyree, R. N., Hiremath, G., & Huo, Y. (2025, April). *Automatic image unfolding and stitching framework for esophageal lining video based on density-weighted feature matching*. In Medical Imaging 2025: Image Processing (Vol. 13406, pp. 636-642). SPIE.

- [C47] Li, M., Cui, C., Liu, Q., **Deng, R.**, Yao, T., Lionts, M., & Huo, Y. (2024). *Dataset Distillation in Medical Imaging: A Feasibility Study*. In Medical Imaging 2025: Image Perception, Observer Performance, and Technology Assessment (Vol. 13409, pp. 172-179). SPIE.
- [C46] Yu, L., Yin, M., **Deng, R.**, Liu, Q., Yao, T., Cui, C., ... & Huo, Y. (2025, April). *GLAM: glomeruli segmentation for human pathological lesions using adapted mouse model*. In Medical Imaging 2025: Digital and Computational Pathology (Vol. 13413, pp. 240-248). SPIE.
- [C45] Bao, S., Wang, Y., Rudravaram, G., Zhang, R., **Deng, R.**, Yu, X., ... & Huo, Y. (2025, April). *Quantitative analysis of colonic epithelial cell aging in a cell-cycle-like model: changes in nucleus and cytoplasm along the crypt axis*. In Medical Imaging 2025: Digital and Computational Pathology (Vol. 13413, pp. 197-204). SPIE.
- [C44] Wu, Y., Xiong, J., Yao, T., **Deng, R.**, Guo, J., Yue, J., ... & Huo, Y. (2024). *Cross-organ Deployment of EOS Detection AI without Retraining: Feasibility and Limitation*. In Medical Imaging 2025: Digital and Computational Pathology (Vol. 13413, pp. 249-256). SPIE.
- [C43] Zhu, J., Yin, M., **Deng, R.**, Long, Y., Wang, Y., Wang, Y., ... & Huo, Y. (2024). *Cross-Species Data Integration for Enhanced Layer Segmentation in Kidney Pathology*. In Medical Imaging 2025: Digital and Computational Pathology (Vol. 13413, pp. 49-56). SPIE.
- [C42] Guo, J., Lu, S., Cui, C., **Deng, R.**, Yao, T., Tao, Z., ... & Huo, Y. (2024). *Assessment of Cell Nuclei AI Foundation Models in Kidney Pathology*. In Medical Imaging 2025: Image Perception, Observer Performance, and Technology Assessment (Vol. 13409, pp. 76-82). SPIE.
- [C41] Xiong, J., Li, M., **Deng, R.**, Yao, T., Bao, S., Tyree, R. N., ... & Huo, Y. (2025, April). *Enhanced feature-based image stitching for endoscopic videos in pediatric eosinophilic esophagitis*. In Medical Imaging 2025: Image-Guided Procedures, Robotic Interventions, and Modeling (Vol. 13408, pp. 99-105). SPIE.
- [C40] Zhu, J., **Deng, R.**, Yao, T., Xiong, J., Qu, C., Guo, J., ... & Huo, Y. (2025). *MagNet: Multi-Level Attention Graph Network for Predicting High-Resolution Spatial Transcriptomics*. In International Conference on Medical Imaging with Deep Learning 2025. **(Oral presentation)**
- [C39] Long, Y., Wu, Z., Su, X., Yu, L., **Deng, R.**, Yang, H., & Huo, Y. (2025). *Towards Fine-grained Renal Vasculature Segmentation: Full-Scale Hierarchical Learning with FH-Seg*. SPIE Medical Imaging 2025.
- [C38] Xiong, J., Xiong, H., Liu, Q., **Deng, R.**, Tyree, R. N., Hiremath, G., & Huo, Y. (2025). *Expanding Training Data for Endoscopic Phenotyping of Eosinophilic Esophagitis*. SPIE Medical Imaging 2025
- [C37] Liu, Q., Cui, C., **Deng, R.**, Yao, T., Yang, Y., Tang, Y., & Huo, Y. (2025). *Write Sentence with Images: Revisit the Large Vision Model with Visual Sentence*. Electronic Imaging, 37,

1-5.

- [C36] Yang, Y., Wang, Y., Yao, T., **Deng, R.**, Yin, M., Zhao, S., ... & Huo, Y. (2025). *PySpatial: A high-speed whole slide image pathomics toolkit*. Electronic Imaging, 37(12), HPCI-177.
- [C35] Li, M., Xiong, J., **Deng, R.**, Yao, T., Tyree, R. N., Hiremath, G., & Huo, Y. (2024). *Automatic Image Unfolding and Stitching Framework for Esophageal Lining Video Based on Density-Weighted Feature Matching*. SPIE Medical Imaging 2025.
- [C34] Cui, C., **Deng, R.**, Guo, J., Liu, Q., Yao, T., Yang, H., & Huo, Y. (2024). *PFPs: Prompt-guided Flexible Pathological Segmentation for Diverse Potential Outcomes Using Large Vision and Language Models*. IEEE-EMBS International Conference on Biomedical and Health Informatics
- [C33] Tang, Y., He, Y., Nath, V., Guo, P., **Deng, R.**, Yao, T., ... & Huo, Y. (2026). *Holohisto: End-to-end gigapixel wsi segmentation with 4k resolution sequential tokenization*. Electronic Imaging, 38(11), HPCI-199.
- [C32] Yue, J., Yao, T., **Deng, R.**, Liu, Q., Xiong, J., Yang, H., & Huo, Y. (2024). *Weighted Circle Fusion: Ensembling Circle Representation from Different Object Detection Results*. SPIE Medical Imaging 2025.
- [C31] Liu, Q., **Deng, R.**, Cui, C., Yao, T., Nath, V., Tang, Y., & Huo, Y. (2025). *mTREE: Multi-Level Text-Guided Representation End-to-End Learning for Whole Slide Image Analysis*. Electronic Imaging, 37(12), HPCI-183.
- [C30] Yao, X., Liu, H., Hu, D., Lu, D., Lou, A., Li, H., **Deng, R.**, ... & Oguz, I. (2024, February). *FNPC-SAM: uncertainty-guided false negative/positive control for SAM on noisy medical images*. In Proceedings of SPIE--the International Society for Optical Engineering (Vol. 12926). NIH Public Access.
- [C29] Remedios, L. W., Bao, S., Remedios, S. W., Lee, H. H., Cai, L. Y., Li, T., ... **Deng, R.**, ... & Landman, B. A. (2024, April). *Nucleus subtype classification using inter-modality learning*. In Medical Imaging 2024: Digital and Computational Pathology (Vol. 12933, pp. 92-100). SPIE.
- [C28] Liu, M., Qi, C., Bao, S., Liu, Q., **Deng, R.**, Wang, Y., ... & Huo, Y. (2024, April). *Evaluation Kidney Layer Segmentation on Whole Slide Imaging using Convolutional Neural Networks and Transformers*. In Medical Imaging 2024: Digital and Computational Pathology (Vol. 12933, pp. 334-339). SPIE.
- [C27] Bao, S., Zhu, S., Kolachala, V. L., Remedios, L. W., Hwang, Y., Sun, Y., ... **Deng, R.**, ... & Huo, Y. (2024, April). *Cell Spatial Analysis in Crohn's Disease: Unveiling Local Cell Arrangement Pattern with Graph-based Signatures*. In Medical Imaging 2024: Digital and Computational Pathology (Vol. 12933, pp. 273-284). SPIE.
- [C26] Liu, Y., **Deng, R.**, Xiong, J., Tyree, R. N., Correa, H., Hiremath, G., ... & Huo, Y. (2024, April). *Eosinophils Instance Object Segmentation on Whole Slide Imaging Using Multi-label Circle Representation*. In Medical Imaging 2024: Digital and Computational Pathology (Vol. 12933, pp. 114-132). SPIE.
- [C25] Xiong, J., Liu, Y., **Deng, R.**, Tyree, R. N., Correa, H., Hiremath, G., ... & Huo, Y. (2024,

- April). *Deep Learning-Based Open Source Toolkit for Eosinophil Detection in Pediatric Eosinophilic Esophagitis*. In Medical Imaging 2024: Digital and Computational Pathology (Vol. 12933, pp. 231-237). SPIE
- [C24] Chen, J., Wang, Y., **Deng, R.**, Liu, Q., Cui, C., Yao, T., ... & Huo, Y. (2024, April). *Spatial Pathomics Toolkit for Quantitative Analysis of Podocyte Nuclei with Histology and Spatial Transcriptomics Data in Renal Pathology*. In Medical Imaging 2024: Digital and Computational Pathology (Vol. 12933, pp. 252-260). SPIE.
- [C23] Leng, H., **Deng, R.**, Bao, S., Fang, D., Millis, B. A., Tang, Y., ... & Huo, Y. (2024, April). *High-performance Data Management for Whole Slide Image Analysis in Digital Pathology*. In Medical Imaging 2024: Digital and Computational Pathology (Vol. 12933, pp. 238-244). SPIE.
- [C22] Cui, C., Deng, R., Liu, Q., Yao, T., Bao, S., Remedios, L. W., ... & Huo, Y. (2024). *All-in-sam: from weak annotation to pixel-wise nuclei segmentation with prompt-based finetuning*. In Journal of Physics: Conference Series (Vol. 2722, No. 1, p. 012012). IOP Publishing.
- [C21] Yao, T., Archer, D., Li, Z., Cai, L. Y., Kanakaraj, P., Newlin, N., Liu, Q., **Deng, R.**, Cui, C., Bao, S., ... & Landman, B. A. (2024). *Ts-FWE: Token-Aware Single-Shell Free Water Estimation for Brain Diffusion MRI*. In International Workshop on Computational Diffusion MRI (pp. 132-142). Springer.
- [C20] Bao, S., Guo, J., Lee, H. H., **Deng, R.**, Cui, C., Remedios, L. W., ... & Huo, Y. (2024, May). *Mitigating Over-Saturated Fluorescence Images Through a Semi-Supervised Generative Adversarial Network*. In 2024 IEEE International Symposium on Biomedical Imaging (ISBI) (pp. 1-5). IEEE.
- [C19] Yao, T., Rheault, F., Cai, L. Y., Asad, Z., Newlin, N., Cui, C., ... **Deng, R.**, ... & Huo, Y. (2023). *Robust Fiber ODF Estimation Using Deep Constrained Spherical Deconvolution for Diffusion MRI*. In SPIE Medical Imaging 2024.
- [C18] Cui, C., Wang, Y., Bao, S., Tang, Y., **Deng, R.**, Remedios, L. W., ... & Huo, Y. (2023, October). *Feasibility of Universal Anomaly Detection Without Knowing the Abnormality in Medical Images*. In Workshop on Medical Image Learning with Limited and Noisy Data (pp. 82-92). Cham: Springer Nature Switzerland.
- [C17] Remedios, L. W., Cai, L. Y., Remedios, S. W., Ramadass, K., Krishnan, A., **Deng, R.**, ... & Landman, B. A. (2023). *Exploring shared memory architectures for end-to-end gigapixel deep learning*. In International Conference on Medical Imaging with Deep Learning Short Paper Track.
- [C16] Bao, S., Cui, C., Li, J., Tang, Y., Lee, H. H., **Deng, R.**, ... & Huo, Y. (2023, April). *Topological-preserving membrane skeleton segmentation in multiplex immunofluorescence imaging*. In Medical Imaging 2023: Digital and Computational Pathology (Vol. 12471, pp. 62-71). SPIE.
- [C15] Remedios, L. W., Bao, S., Kerley, C. I., Cai, L. Y., Rheault, F., **Deng, R.**, ... & Landman, B. A. (2023, April). *Predicting Crohn's disease severity in the colon using mixed cell nucleus density from pseudo labels*. In Medical Imaging 2023: Digital and Computational

- Pathology (Vol. 12471, pp. 302-309). SPIE.
- [C14] Bao, S., Lee, H. H., Yang, Q., Remedios, L. W., **Deng, R.**, Cui, C., ... & Huo, Y. (2023, April). *Alleviating tiling effect by random walk sliding window in high-resolution histological whole slide image synthesis*. In Medical Imaging with Deep Learning.
 - [C13] Yao, T., Rheault, F., Cai, L. Y., Nath, V., Asad, Z., Newlin, N., ... **Deng, R.**, ... & Huo, Y. (2023, April). *Deep constrained spherical deconvolution for robust harmonization*. In Medical Imaging 2023: Image Processing (Vol. 12464, pp. 169-176). SPIE.
 - [C12] Cui, C., Bao, S., Li, J., Deng, R., Remedios, L. W., Asad, Z., ... & Huo, Y. (2023, February). *Influence of cell-type ratio on spatially resolved single-cell transcriptomes using the Tangram algorithm: based on implementation on single-cell and MxIF data*. In Proceedings of SPIE--the International Society for Optical Engineering (Vol. 12471). NIH Public Access.
 - [C11] Nguyen, E. H., Yang, H., Asad, Z., **Deng, R.**, Fogo, A. B., & Huo, Y. (2022, September). *CircleSnake: Instance Segmentation with Circle Representation*. In International Workshop on Machine Learning in Medical Imaging (pp. 298-306). Cham: Springer Nature Switzerland.
 - [C10] Liu, Q., Cui, C., **Deng, R.**, Asad, Z., Yao, T., Zhu, Z., & Huo, Y. (2022, September). *Leverage Supervised and Self-supervised Pretrain Models for Pathological Survival Analysis via a Simple and Low-cost Joint Representation Tuning*. In MICCAI Workshop on Resource-Efficient Medical Image Analysis (pp. 75-84). Cham: Springer Nature Switzerland.
 - [C9] Bao, S., Li, J., Cui, C., Tang, Y., **Deng, R.**, Remedios, L. W., ... & Huo, Y. (2022, September). *MxIF Q-score: Biology-Informed Quality Assurance for Multiplexed Immunofluorescence Imaging*. In International Workshop on Medical Optical Imaging and Virtual Microscopy Image Analysis (pp. 42-52). Cham: Springer Nature Switzerland.
 - [C8] Zhu, Z., **Deng, R.**, Liu, Q., Asad, Z., Cui, C., Yao, T., & Huo, Y. (2022, July). *Large-Scale Patch-Wise Pathological Image Feature Dataset with a Hardware-agnostic Feature Extraction Tool*. In Annual Conference on Medical Image Understanding and Analysis (pp. 778-786). Cham: Springer International Publishing.
 - [C7] Yao, T., Lu, Y., **Deng, R.**, Zhu, Z., Asad, Z., Yang, H., ... & Huo, Y. (2022, April). *Self-supervised learning with large-scale web image mining for characterizing glomerular lesions*. In Medical Imaging 2022: Digital and Computational Pathology (Vol. 12039, pp. 160-166). SPIE.
 - [C6] Nguyen, C., Asad, Z., **Deng, R.**, & Huo, Y. (2022, April). *Evaluating transformer-based semantic segmentation networks for pathological image segmentation*. In Medical Imaging 2022: Image Processing (Vol. 12032, pp. 942-947). SPIE.
 - [C5] Lu, Y., Jha, A., **Deng, R.**, & Huo, Y. (2022, April). *Contrastive learning meets transfer learning: a case study in medical image analysis*. In Medical Imaging 2022: Computer-Aided Diagnosis (Vol. 12033, pp. 715-722). SPIE.
 - [C4] Lu, Y., Yang, H., Zhu, Z., **Deng, R.**, Fogo, A. B., & Huo, Y. (2021). *Improve global*

- glomerulosclerosis classification with imbalanced data using CircleMix augmentation.* arXiv preprint arXiv:2101.07654.
- [C3] Yao, T., Qu, C., Liu, Q., **Deng, R.**, Tian, Y., Xu, J., ... & Huo, Y. (2021). *Compound figure separation of biomedical images with side loss.* In Deep Generative Models, and Data Augmentation, Labelling, and Imperfections: First Workshop, DGM4MICCAI 2021, and First Workshop, DALI 2021, Held in Conjunction with MICCAI 2021, Strasbourg, France, October 1, 2021, Proceedings 1 (pp. 173-183). Springer International Publishing.
 - [C2] Zhao, M., Liu, Q., Jha, A., **Deng, R.**, Yao, T., Mahadevan-Jansen, A., ... & Huo, Y. (2021). *VoxelEmbed: 3D instance segmentation and tracking with voxel embedding based deep learning.* In Machine Learning in Medical Imaging: 12th International Workshop, MLMI 2021, Held in Conjunction with MICCAI 2021, Strasbourg, France, September 27, 2021, Proceedings 12 (pp. 437-446). Springer International Publishing.
 - [C1] Zhu, Z., Lu, Y., **Deng, R.**, Yang, H., Fogo, A. B., & Huo, Y. (2020). *Easierpath: an open-source tool for human-in-the-loop deep learning of renal pathology.* In Interpretable and Annotation-Efficient Learning for Medical Image Computing: Third International Workshop, iMIMIC 2020, Second International Workshop, MIL3ID 2020, and 5th International Workshop, LABELS 2020, Held in Conjunction with MICCAI 2020, Lima, Peru, October 4–8, 2020, Proceedings 3 (pp. 214-222). Springer International Publishing.

Peer Reviewed Abstracts

- [A10] **Deng, R.**, Fang, H., Zhao, L., Salvatore, S., Sabuncu, M., Seshan, S., & Yang, Y. (2026). *1442 Automated Orthogonally Corrected Quantification of Glomerular Basement Membrane Thickness by Artificial Intelligence: Validation Against Pathologist Measurements.* Laboratory Investigation, 106(3).
- [A9] **Deng, R.**, Shi, T., Salvatore, S., Seshan, S., Robinson, B., Sabuncu, M., & Yang, Y. (2026). *1441 AI-Based Identification and Quantification of Global Glomerulosclerosis in Nephrectomy Specimens: Accuracy and Its Predictive Value.* Laboratory Investigation, 106(3).
- [A8] Yang, H., Zhong, J., Yin, M., Bhargava, M., Wang, Y., Zhao, S., ... **Deng, R.**, ... & Fogo, A. (2026). *1452 Proximal Tubule-Derived Osteopontin Activates the Local Osteopontin-CD44 Axis to Precondition Glomerular Parietal Epithelial Cells Following Acute Tubular Injury.* Laboratory Investigation, 106(3).
- [A7] Yin, M., Yang, Y., Wang, Y., **Deng, R.**, Liu, J., Zhao, S., ... & Yang, H. (2025). *Differential glomerular pathomics and spatial transcriptomics in short and long-looped nephrons: Insights from human and mouse models: Sa-po0005.* Journal of the American Society of Nephrology, 36(10S), 10-1681.
- [A6] Yin, M., Zhao, O. S., Wang, Y., Zhao, S., **Deng, R.**, Huo, Y., ... & Fogo, A. B. (2024). *Artificial Intelligence (AI) Reveals Dynamic Morphological Shifts in Parietal Epithelial Cells after Acute Tubular Injury: TH-PO030.* Journal of the American Society of Nephrology, 35(10S), 10-1681.

- [A5] Yang, H., Zhong, J., Wang, Y., Zhao, S., Yao, T., **Deng, R.**, ... & Huo, Y. (2024). *WCN24-1702 Mesangial Morphomics Analysis in Short-Looped and LongLooped Nephrons Using Artificial Intelligence in Diabetic Nephropathy*. *Kidney International Reports*, 9(4), S331.
- [A4] Qi, C., Zhong, J., Fu, B., Wang, Y., Zhao, S., **Deng, R.**, Yao, T., Huo, Y., Yang, H., & Fogo, A. (2024) *Comparative Glomerular Morphomics Analysis in Short-Looped and Long-Looped Nephrons Using Artificial Intelligence in Human Nephrectomy Samples*. In The Annual Meeting of The United States and Canadian Academy of Pathology (USCAP) 2024.
- [A3] Zhao, O., Zhao, S., **Deng, R.**, Huo, Y., Zhong, J., Yang, H., & Fogo, A. (2023) *Injured Proximal Tubules Sensitize Glomerular Epithelial Cells to Injury via Local Paired Ligand/Receptor Interactions*. In The Annual Meeting of The United States and Canadian Academy of Pathology (USCAP) 2023.
- [A2] Yang, H., **Deng, R.**, Zhao, S., Zhong, J., Huo, Y., & Fogo, A. (2022) *Integration of spatial transcriptomics and morphology in assessing atubular vs connected glomeruli*. *Journal of the American Society of Nephrology*, 33(11S), 210. (In Kidney Week 2022, the Annual Meeting of the American Society of Nephrology (ASN))
- [A1] Yang, H., **Deng, R.**, Huo, Y., & Fogo, A. (2020) *Automated Atubular Glomeruli Detection Using 3D Glomerular Quantification Algorithms*. In Kidney Week 2020, the Annual Meeting of the American Society of Nephrology (ASN).

Patents

- [P3] Huo, Y., Yang, H., & **Deng, R.** *Systems and Methods for Pathological Image Segmentation via Molecular-Empowered Learning*, U.S. Patent Application No. 18/967,022.
- [P2] **Deng, R.**, Shaikh, N., Shannon, G., & Nie, Y. *Attention-based multimodal-fusion for patient survival prediction*
- [P1] **Deng, R.**, Shi, Y. *Diagnosis of Pre-excitation Syndrome Based on Multi-features Extraction of Electrocardiogram*

RESEARCH FUNDING

ACTIVE

- Weill Cornell Medicine, Department of Radiology (PI: **Deng**)
“Cornell NYC AIMI Fellowship,” Award Period: November 2024 – Present
- Weill Cornell Medicine, Clinical and Translational Science Center (PI: Ikemura, Co-PI: **Deng**)
“CTSC Pilot Award,” Award Period: June 2025 – Present
- Weill Cornell Medicine, Center for Translational Pathology (PI: Ikemura, Co-I: **Deng**)
“CTP Project Award,” Award Period: June 2026 – Present

PRESENTATIONS

Invited Talks

- *Clinically Guided Spatial Transcriptomics Prediction.*
Keynote, Medical Imaging Analysis for Spatial Omics (MISO) Workshop, **MICCAI**, Strasbourg, France, 2026.
- *Knowledge-infused Learning In Computational Pathology.*
Histopathological Image Analysis workshop, **Association for Pathology Informatics summit**, Minneapolis, MN, 2026
- *CASC-AI: Consensus-aware Self-corrective Learning for Cell Segmentation with Noisy Labels*
Journal Club at Intelligent Clinical Care Center, **University of Florida**, Gainesville, FL, 2025.
- *Knowledge-infused Learning In Computational Pathology.*
AI Fellowship Seminar, **Weill Cornell Medicine**, New York, NY, 2024.
- *Knowledge-infused Efficient Learning For Giga-pixel Virtual Microscopy Image.*
PhD Thesis Madness, **MICCAI**, Vancouver, Canada, 2023
- *Multimodal Learning & Cross-modality Attention-based Multimodal Fusion Patient Survival Prediction*
Knowledge Sharing Workshop, **Roche Diagnostics Solutions**, Santa Clara, CA, 2023.
- *Knowledge-infused Efficient Learning For Giga-pixel Virtual Microscopy Image.*
CAMCA AIxMed Seminar, **Massachusetts General Hospital and Harvard Medical School**, Boston, MA, 2022.

Conference Oral Presentations

- *MORI-Seg: Learning Morphological Geometry for Instance Segmentation without Instance Annotations*
MICCAI, Strasbourg, France, 2026.
- *CASC-AI: Consensus-aware Self-corrective Learning for Cell Segmentation with Noisy Labels*
Medical Imaging with Deep Learning, Salt Lake City, 2025.
- *Cross-modality Attention-based Multimodal Fusion for Non-small Cell Lung Cancer (NSCLC) Patient Survival Prediction.*
SPIE Medical Imaging, San Diego, 2024.
- *Leverage Weakly Annotation to Pixel-wise Annotation via Zero-shot Segment Anything Model for Molecular-empowered Learning.*
SPIE Medical Imaging, San Diego, 2024.
- *High-performance data management for whole slide image analysis in digital pathology.*
SPIE Medical Imaging, San Diego, 2024.
- *Cell Spatial Analysis in Crohn's Disease: Unveiling Local Cell Arrangement Pattern with Graph-based Signatures.*
SPIE Medical Imaging, San Diego, 2024.

- *An accelerated pipeline for multi-label renal pathology image segmentation at the whole slide image level.*
SPiE Medical Imaging, San Diego, 2023.
- *An end-to-end pipeline for 3D slide-wise multi-stain renal pathology registration.*
SPiE Medical Imaging, San Diego, 2023.
- *Cross-Scale Attention Guided Multi-instance Learning for Crohn's Disease Diagnosis with Pathological Images.*
MICCAI MMMI Workshop, Singapore, 2022.
- *Dense multi-object 3D glomerular reconstruction and quantification on 2D serial section whole slide images.*
SPiE Medical Imaging, San Diego, 2022.
- *Self-supervised learning with large-scale web image mining for characterizing glomerular lesions.*
SPiE Medical Imaging, San Diego, 2022.
- *CaCL: Class-Aware Codebook Learning for Weakly Supervised Segmentation on Diffuse Image Patterns.*
DGM4MICCAI Workshop, Strasbourg, France, 2021.

LEADERSHIP AND SERVICE

Editorial Service

- Associate Editor, IEEE Journal of Biomedical and Health Informatics (JBHI)
- Publishing Editor, Journal of Machine Learning for Biomedical Imaging (MELBA)

Conference Organization Service

- MICCAI 2026 Area Chair
- MICCAI 2026 MISO Workshop, Program Committee
- MIDL 2026 Program Chair
- MICCAI 2025 Area Chair
- CVPR 2025 Medical Computer Vision Workshop Program Committee
- ISBI 2025, Technical Program Committee Reviewer
- MICCAI 2024 MOVI workshop, Program Committee
- MICCAI 2024 KPIs Challenge, Executive Committee
- MIDL 2023, Local Organizing Committee, Virtual Session Volunteer
- MED-NEURIPS 2023, Program Committee
- ICCV CVAMD 2023, Program Committee
- MED-NEURIPS 2022, Program Committee

Journal Reviewing (Selected)

- IEEE Transactions on Medical Imaging (TMI)
- Medical Image Analysis (MedIA)
- Kidney International (KI)
- Nature Communications (NC)
- IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
- IEEE Transactions on Neural Networks and Learning Systems (TNNLS)
- IEEE Transactions on Image Processing (TIP)
- Proceedings of the National Academy of Sciences (PNAS)
- Computers in Biology and Medicine (CBM)
- IEEE Journal of Biomedical and Health Informatics (JBHI)
- IEEE Transactions on Biomedical Engineering (TBME)
- Journal of Medical Imaging (JMI)
- Journal of Machine Learning for Biomedical Imaging (MELBA)
- Artificial Intelligence in Medicine (AIM)
- Nature Communications Medicine (NCM)
- IEEE Transactions on Geoscience and Remote Sensing (TGRS)
- IEEE Transaction on Mobile Computing (TMC)
- IEEE Transaction on multimedia (TMM)
- Advanced Science (AS)
- Pattern Recognition (PR)
- Scientific Reports (SR)
- Plos One (PO)
- PNAS Nexus (PN)
- Engineering Application of Artificial Intelligence (EAAI)
- IEEE Access

Conference Reviewing

- Conference on Computer Vision and Pattern Recognition (CVPR)
- Conference on Neural Information Processing Systems (NeurIPS)
- International Conference on Learning Representations (ICLR)
- AAAI Conference on Artificial Intelligence (AAAI)
- International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)
- International Conference on Medical Image Computing and Computer Assisted Intervention Workshop (MICCAIW)
- International Conference on Medical Imaging with Deep Learning (MIDL)
- IEEE International Symposium on Biomedical Imaging (ISBI)
- IEEE International Conference on Computer Vision Workshop (ICCVW)

- Conference on Neural Information Processing Systems Workshop (NeurIPS Workshops)

Co-mentoring

- Cornell University
 - Daniel Reisenbüchler, Visiting PhD, Whole slide imaging analysis
 - Ledi Wang, MS CS, Joint SPEP/IFE image understanding for diagnosis
 - Duo-Jie Hsiao, MS CS, Agentic AI for cell segmentation with noisy labels
 - Kuo Gong, MS CS, Vision-language model for digital pathology diagnosis
 - Fanqi Cheng, MS CS, Vision-language model for digital pathology diagnosis
 - Leiyue Zhao, MS, Instance segmentation for renal pathology
 - Zheyu Zhu, MS, Active learning for cost-efficient spatial transcriptomics
 - Zhenhao Guo, BS CS, Fine-tuning VLMs for digital pathology
 - Hongjin Fang, BS BME, Few-shot segmentation for renal pathology
 - Tianyu Shi, BS CS, Fine-grained diseased glomerular detection
 - Greta Hasko, BS Bio Sci, Anomaly detection for diseased glomeruli and tubules
 - Ellen Wei, BS, 3D pathology registration and reconstruction
 - Helen Qian, BS, Cross-modality understanding for diffuse glioma brain tumors
- Vanderbilt University
 - Juming Xiong, MS BME, Circle representation for medical instance segmentation
 - Xueyuan Li, MS DS, Foundation model in cell annotation
 - Lining Yu, MS CS, Multi-class segmentation for glomerular lesion
 - Zheyu Zhu, BS CS, Feature embedding for whole slide imaging
 - Peize Li, BS CS, Multi-stain whole slide imaging registration
 - Haoju Leng, BS CS, Accelerated segmentation pipeline for kidney whole slide images
 - Yanwei Li, BS CS, Molecular-empowered cell annotation
 - Saydolimkhon Agzamkhodjaev, BS CS, Undergraduate research credit
 - Yilin Liu, BS CS, Cell detection on pathological images
 - Ethan Nguyen, BS CS, Nuclei detection on pathological images
 - Muhao Liu, BS CS, Kidney layer segmentation
 - Franklin Hu, BS CS, Multi-site vessel segmentation for renal pathology

Community Volunteer

- KPMP Publications & Presentations (P&P) Committee
- IEEE EMBS Student Mentoring Program 2023 Ambassador
- VandyHacks Judge