Huidong Xie

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About me

My research focuses on deep learning for medical imaging, particularly for multi-modal 3D/4D image analysis, processing, and reconstruction for PET, SPECT, and CT. I develop AI-driven methods to improve the safety, efficiency, and diagnostic accuracy of medical imaging. My work lies at the intersection of computational imaging, computer vision, artificial intelligence and medical imaging physics. I am passionate to integrate cross-domain knowledge and to develop the state-of-the-art computer vision and generative AI models to solve real-world challenging problems for various imaging systems.

Education

- **Yale University** — New Haven, CT, USA
  Ph.D. in Biomedical Engineering — *Sep 2020 - May 2025*
  Thesis: Deep Learning Strategies for PET and SPECT Image Enhancement [Link]
  Committee: Professors Chi Liu, Albert Sinusas, Richard Carson, Xenophon Papademetris
- **Yale University** — New Haven, CT, USA
  MPhil and MS in Biomedical Engineering (awarded en route to Ph.D.) — *Sep 2020 - May 2023*
- **Rensselaer Polytechnic Institute (RPI)** — Troy, NY, USA
  Bachelor of Science in Biomedical Engineering with Magna Cum Laude Honor — *Sep 2016 - May 2020*
  GPA: 3.81/4.00; **Concentration:** Medical Imaging/Instrumentation; **Minor:** Psychology
  Advisor: Professor Ge Wang.

Experience

- **PhD student at Yale PET Center, Yale** — New Haven, CT, USA
  Worked on SPECT/PET/CT image reconstruction/analysis/processing and cardiology. Advisor: Chi Liu. — *Sep 2020 - Present*
- **Research Scientist Intern at PET Physics Group, Siemens Healthineers** — Knoxville, TN, USA
  Worked on deep learning-based respiratory motion correction for PET reconstruction and performed Monte Carlo simulations to evaluate model performance. Advisor: Maurizio Conti. — *Jun 2023 - Sep 2023*
- **Undergraduate Researcher at AI-based X-ray Imaging System (AXIS) Lab, RPI** — Troy, NY, USA
  Worked on deep learning-based CT image reconstruction/analysis, and developed Few-view breast CT imaging techniques with Koning Health Advisor: Ge Wang. — *May 2018 - Sep 2020*

Selected Awards

- SNMMI Ones to Watch Award (annual recognition for early career professionals). 2025
- SNMMI Freek J. Beekman Travel award for early career professional (US$1000 cash award, one per year). 2025
- SNMMI first-place Freek J. Beekman Young Investigator Award. 2024
- SNMMI Travel Award (US$1000 cash award for top conference submissions). 2024 – 2025
- CASNMMI third-place Young Investigator Award. 2024
- IEEE TMI Distinguished Reviewer. 2023 – 2024
- Second-place Young Investigator Award at the CAMPS (AAPM chapter) Spring Meeting. 2023
- Yale Conference Travel Fellowship. 2023 – 2024
- IEEE NSS MIC Trainee Grant. 2021 – 2024
- Yale Ph.D. fellowship, Yale. 2020
- Class of 1902 Research Prize, RPI. (one student annually in the school of engineering & school of science) 2020
- Magna Cum Laude Honor, RPI. 2020
- Dean's Honor List, RPI. 2016 – 2020
- Academic Citation Nominations for my work in BMED 4941, Deep Learning - Medical Imaging, RPI. 2019

Journal Publications

[Google Scholar Profile] *** Indicates Equal Contributions**

1. **[Under Review Paper]** **Huidong Xie**, Weijie Gan, Bo Zhou, Ming-Kai Chen, Michal Kulon, Annemarie Boustani, Benjamin A. Spencer, Reimund Bayerlein, Wei Ji, Xiongchao Chen, Qiong Liu, Xueqi Guo, Menghua Xia, Yinchi Zhou, Hui Liu, Liang Guo, Hongyu An, Ulugbek S. Kamilov, Hanzhong Wang, Biao Li, Axel Rominger, Kuangyu Shi, Ge Wang, Ramsey D. Badawi, Chi Liu. Dose-aware Diffusion Model for 3D Low-count PET: Multi-institutional Validation with Reader Study and Real Low-dose Data. **First-place Freek J. Beekman Young Investigator Award at SNMMI 2024. Under review at IEEE Transactions on Pattern Analysis and Machine Intelligence.** [arXiv]

2. [**Under Review Paper**] Menghua Xia, **Huidong Xie**, Qiong Liu, Bo Zhou, Hanzhong Wang, Biao Li, Axel Rominger, Ramsey D. Badawi, Kuangyu Shi, Georges EI, Fakhri, Chi Liu. LeqMod: Adaptable Lesion-Quantification-Consistent Modulation for Deep Learning Low-Count PET Image Denoising. **Under review at IEEE Transactions on Medical Imaging**.

3. [**Under Review Paper**] Qiong Liu, Xueqi Guo, Yu-Jung Tsai, Jean-Dominique Gallezot, Ming-Kai Chen, Liang Guo, **Huidong Xie**, Vladimir Panin, Richard E. Carson, Chi Liu. Patlak-Guided Self-Supervised Learning for Dynamic PET Denoising. **Under review at IEEE Transactions on Radiation and Plasma Medical Sciences**.

4. [**Under Review Paper**] Menghua Xia, Kuan-Yin Ko, Der-Shiun Wang, Ming-Kai Chen, Qiong Liu, **Huidong Xie**, Liang Guo, Wei Ji, Jinsong Ouyang, Reimund Bayerlein, Benjamin A. Spencer, Quanzheng Li, Ramsey D. Badawi, Georges EI Fakhri, Chi Liu. Anatomically and Metabolically Informed Diffusion for Unified Denoising and Segmentation in Low-Count PET Imaging. **Under review at Medical Image Analysis**.

5. [**Under Review Paper**] Yinchi Zhou, **Huidong Xie**, Menghua Xia, Qiong Liu, Bo Zhou, Tianqi Chen, Jun Hou, Liang Guo, Xinyuan Zheng, Hanzhong Wang, Biao Li, Axel Rominger, Kuangyu Shi, Nicha C. Dvornek, and Chi Liu. Fed-NDIF: A Noise-Embedded Federated Diffusion Model For Low-Count Whole-Body PET Denoising. **Under review at Medical Image Analysis**.

6. [**Under Review Paper**] Zhihao Chen, Tao Chen, Chenhui Wang, Qi Gao, **Huidong Xie**, Chuang Niu, Ge Wang, Hongming Shan. LangMamba: A Language-driven Mamba Framework for Low-dose CT Denoising with Vision-language Models. **Under review at IEEE Transactions on Radiation and Plasma Medical Sciences**.

7. **Huidong Xie**, Weijie Gan, Wei Ji, Xiongchao Chen, Alaa Alashi, Stephanie L. Thorn, Bo Zhou, Qiong Liu, Menghua Xia, Xueqi Guo, Yi-Hwa Liu, Hongyu An, Ulugbek S. Kamilov, Ge Wang, Albert J. Sinusas, Chi Liu. A Generalizable 3D Diffusion Framework for Low-Dose and Few-View Cardiac SPECT. **Accepted at Medical Image Analysis**, 2025. [arXiv]

8. **Huidong Xie**, Alaa Alashi, Stephanie L. Thorn, Xiongchao Chen, Bo Zhou, Albert J. Sinusas, Chi Liu. Increasing angular sampling for dedicated cardiac SPECT scanner: Implementation with Deep Learning and Validation with human data. **Journal of Nuclear Cardiology**, 2025. **Selected as the journal cover paper for the July 2025 issue.** [DOI]

9. Weijie Gan, **Huidong Xie**, Carl von Gall, Gunther Platsch, Michael T. Jurkiewicz, Andrea Andrade, Udunna C. Anazodo, Ulugbek S. Kamilov, Hongyu An, Jorge Cabello. Pseudo-MRI-Guided PET Image Reconstruction Method Based on a Diffusion Probabilistic Model. **IEEE Transactions on Radiation and Plasma Medical Sciences**, 2025. [DOI]

10. Tianqi Chen, Jun Hou, Yinchi Zhou, **Huidong Xie**, Xiongchao Chen, Qiong Liu, Xueqi Guo, Menghua Xia, James S. Duncan, Chi Liu, Bo Zhou. 2.5D Multi-view Averaging Diffusion Model for 3D Medical Image Translation: Application to Low-count PET Reconstruction with CT-less Attenuation Correction. **IEEE Transactions on Medical Imaging**, 2025. [DOI]

11. Jun Hou, Tianqi Chen, Yinchi Zhou, Xiongchao Chen, **Huidong Xie**, Qiong Liu, Menghua Xia, Vladimir Panin, Takuya Toyonaga, Chi Liu, and Bo Zhou. An Investigation on Cross-Tracer Generalizability of Deep Learning-based PET Attenuation Correction. **IEEE Transactions on Radiation and Plasma Medical Sciences**, 2025. [DOI]

12. **Huidong Xie**, Liang Guo, Alexandre Velo, Qiong Liu, Xueqi Guo, Bo Zhou, Xiongchao Chen, Yu-Jung Tsai, Tianshun Miao, Menghua Xia, Ian S Armstrong, Ge Wang, Richard E. Carson, Albert J. Sinusas, Chi Liu. Noise-aware Dynamic Image Denoising and Positron Range Correction for Rubidium-82 Cardiac PET Imaging via Self-supervision. **Medical Image Analysis**, 2024. [DOI]

13. Bo Zhou, Jun Hou, Tianqi Chen, Yinchi Zhou, Xiongchao Chen, **Huidong Xie**, Qiong Liu, Xueqi Guo, Yu-Jung Tsai, Vladimir Y. Panin, Takuya Toyonaga, James S. Duncan, Chi Liu. POUR-Net: A Population-Prior-Aided Over-Under-Representation Network for Low-Count PET Attenuation Map Generation. **IEEE Transactions on Medical Imaging**, 2024. [DOI]

14. Yinchi Zhou, Tianqi Chen, Jun Hou, **Huidong Xie**, Nicha C. Dvornek, S. Kevin Zhou, David L. Wilson, James S. Duncan, Chi Liu, Bo Zhou. Cascaded Multi-path Shortcut Diffusion Model for Medical Image Translation. **Medical Image Analysis**, 2024. [DOI]

15. Xueqi Guo, Luyao Shi, Xiongchao Chen, Qiong Liu, Bo Zhou, **Huidong Xie**, Yi-Hwa Liu, Richard Palyo, Edward J. Miller, Albert J. Sinusas, Lawrence Staib, Bruce Spottiswoode, Chi Liu, and Nicha C. Dvornek. TAI-GAN: A Temporally and Anatomically Informed Generative Adversarial Network for early-to-late frame conversion in dynamic cardiac PET inter-frame motion correction. **Medical Image Analysis**, 2024. [DOI]

16. Qiong Liu, Yu-Jung Tsai, Jean-Dominique Gallezot, Xueqi Guo, Ming-Kai Chen, Darko Pucar, Colin Young, Vladimir Panin, Michael Casey, Tianshun Miao, **Huidong Xie**, Xiongchao Chen, Bo Zhou, Richard Carson, Chi Liu. Population-based Deep Image Prior for Dynamic PET Denoising: A Data-driven Approach to Improve Parametric Quantification. **Medical Image Analysis**, 2024. [DOI]

17. Xiongchao Chen, Bo Zhou, Xueqi Guo, **Huidong Xie**, Qiong Liu, James S. Duncan, Albert J. Sinusas, and Chi Liu. DuDoCFNet: Dual-Domain Coarse-to-Fine Progressive Network for Simultaneous Denoising, Limited-View Reconstruction, and Attenuation Correction of Cardiac SPECT. **IEEE Transactions on Medical Imaging**, 2024. [DOI]

18. **Huidong Xie**, Qiong Liu, Bo Zhou, Xiongchao Chen, Xueqi Guo, Hanzhong Wang, Biao Li, Axel Rominger, Kuangyu Shi, Chi Liu. Unified Noise-aware Network for Low-count PET Denoising with Varying Count Levels. **IEEE Transactions on Radiation and Plasma Medical Sciences**, 2023. [DOI]

19. Bo Zhou, **Huidong Xie**, Qiong Liu, Xiongchao Chen, Xueqi Guo, Zhicheng Feng, S. Kevin Zhou, Biao Li, Axel Rominger, Kuangyu Shi, James S. Duncan and Chi Liu. FedFTN: Personalized Federated Learning with Deep Feature Transformation Network for Multi-institutional Low-count PET Denoising. **Medical Image Analysis**, 2023. [DOI]

20. Alexandre Velo, Peng Fan, **Huidong Xie**, Xiongchao Chen, Boutagy Nabil, Feher Attila, Albert Sinusas, Michael Ljungberg, and Chi Liu. ^{99m}Tc/^{123}I Dual-Isotope Correction for Self-Scatter, Down-Scatter, and Tailing Effect for a CZT SPECT with Varying Tracer Distributions. **IEEE Transactions on Radiation and Plasma Medical Sciences**, 2023. [DOI]

21. Xiongchao Chen*, Bo Zhou*, **Huidong Xie**, Xueqi Guo, Jiazhen Zhang, James S. Duncan, Edward J. Miller, Albert J. Sinusas, John A. Onofrey, and Chi Liu. DuSFE: Dual-Channel Squeeze-Fusion-Excitation Co-Attention for Cross-Modality Registration of Cardiac SPECT and CT. **Medical Image Analysis**, 2023. [DOI]

22. Tianshun Miao, Bo Zhou, Juan Liu, Xueqi Guo, Qiong Liu, **Huidong Xie**, Xiongchao Chen, Ming-Kai Chen, Jing Wu, Richard E. Carson, and Chi Liu. Generation of Whole-Body FDG Parametric Ki Images from Static PET Images Using Deep Learning. **IEEE Transactions on Radiation and Plasma Medical Sciences**, 2023. [DOI]

23. **Huidong Xie**, Zhao Liu, Luyao Shi, Kathleen Greco, Xiongchao Chen, Bo Zhou, Attila Feher, John C. Stendahl, Nabil Boutagy, Tassos C. Kyriakides, Ge Wang, Albert J. Sinusas, and Chi Liu. Segmentation-free PVC for Cardiac SPECT using a Densely-connected Multi-dimensional Dynamic Network. **IEEE Transactions on Medical Imaging**, 2022. [DOI]

24. Xiongchao Chen, Bo Zhou, **Huidong Xie**, Tianshun Miao, Hui Liu, Wolfgang Holler, MingDe Lin, Edward Miller, Richard Carson, Albert J. Sinusas, and Chi Liu. DuDoSS: Deep-Learning-Based Dual-Domain Sinogram Synthesis from Sparsely-Sampled Projections of Cardiac SPECT. **Medical Physics**, 2022. [DOI]

25. Bo Zhou, Tianshun Miao, Niloofar Mirian, Xiongchao Chen, **Huidong Xie**, Zhicheng Feng, Xueqi Guo, Xiaoxiao Li, S. Kevin Zhou, James S. Duncan, and Chi Liu. Federated Transfer Learning for Low-dose PET Denoising: A Pilot Study with Simulated Heterogeneous Data. **IEEE Transactions on Radiation and Plasma Medical Sciences**, 2022. [DOI]

26. Bo Zhou, Xiongchao Chen, **Huidong Xie**, S. Kevin Zhou, James S. Duncan, and Chi Liu. DuDoUFNet: Dual-domain under-to-fully-complete progressive restoration network for simultaneous metal artifact reduction and low-dose CT reconstruction. **IEEE Transactions on Medical Imaging**, 2022. [DOI]

27. **Huidong Xie**, Stephanie Thorn, Yi-Hwa Liu, Supum Lee, Zhao Liu, Ge Wang, Albert J. Sinusas, and Chi Liu. Deep Learning Based Few-Angle Cardiac SPECT Reconstruction using Transformer. **IEEE Transactions on Radiation and Plasma Medical Sciences**, 2022. [DOI]

28. **Huidong Xie**, Stephanie Thorn, Xiongchao Chen, Bo Zhou, Hui Liu, Zhao Liu, Supum Lee, Ge Wang, Yi-Hwa Liu, Albert J. Sinusas, and Chi Liu. Increasing Angular Sampling Through Deep Learning for Stationary Cardiac SPECT Image Reconstruction. **Journal of Nuclear Cardiology**, 2022. [DOI]

29. Xiongchao Chen, Bo Zhou, **Huidong Xie**, Luyao Shi, Hui Liu, Wolfgang Holler, MingDe Lin, Yi-Hwa Liu, Edward J. Miller, Albert J. Sinusas, and Chi Liu. Direct and indirect strategies of deep-learning-based attenuation correction for general purpose and dedicated cardiac SPECT. **European Journal of Nuclear Medicine and Molecular Imaging**, 2022. [DOI]

30. Christopher Wiedeman, **Huidong Xie**, Xuanqin Mou, and Ge Wang. Innovating the Medical Imaging Course. **Technology and Innovation**, 2020. [DOI]

31. **Huidong Xie**, Hongming Shan, Wenxiang Cong, Chi Liu, Xiaohua Zhang, Shaohua Liu, Ruola Ning, and Ge Wang. Deep Efficient End-to-End Reconstruction (DEER) Network for Few-View Breast CT Image Reconstruction. **IEEE Access**, 2020. [DOI] [Code]

32. **Huidong Xie**, Hongming Shan, and Ge Wang. Deep Encoder-Decoder Adversarial Reconstruction (DEAR) Network for 3D CT from Few-View Data. **Bioengineering**, 2019. [DOI]

Conference (Peer-Reviewed Full-Length Proceedings)

1. Wei Ji, Jingjing Li, **Huidong Xie**, Jiazhen Zhang, Menghua Xia, Chi Liu. BiCM: Bidirectional Complementary Masking for Multimodal Medical Representation Learning. **In AAAI 2025 AI for Medicine and Healthcare bridge**, Philadelphia, Pennsylvania, USA, Fed 25, 2025. **Best Short Paper Award.**

2. Xueqi Guo, Vijay Shah, David Pigg, Guenther Platsch, Xiongchao Chen, **Huidong Xie**, Weijie Gan, Nicha C Dvornek, Chi Liu, Gerardo Hermosillo, Lauren Partin, Bruce Spottiswoode. Time-Aware GAN for Uptake Time Correction and Standard Uptake Value Harmonization in Dynamic PET Imaging. **In NeurIPS 2024 GenAI4Health Workshop,** Dec 14, 2024, Vancouver, Canada. [Paper].

3. Bo Zhou, Tianqi Chen, Jun Hou, Yinchi Zhou, **Huidong Xie**, James Duncan, and Chi Liu. PDM: A Plug-and-Play Perturbed Multi-path Diffusion Module for Simultaneous Medical Image Segmentation Improvement and Uncertainty Estimation. **In the 15th Machine Learning in Medical Imaging (MLMI 2024), MICCAI workshop,** Oct 6, 2024, Marrakesh, Morocco. [DOI]

4. **Huidong Xie**, Bo Zhou, Xiongchao Chen, Xueqi Guo, Stephanie Thorn, Yi-Hwa Liu, Ge Wang, Albert J. Sinusas, and Chi Liu. Transformer-based Dual-domain Network for Few-view Dedicated Cardiac SPECT Image Reconstructions. **In MICCAI 2023**, Vancouver, Canada, Oct 8-12, 2023. **Early Accept (Top 13.6%).** [DOI]

5. Xiongchao Chen, Bo Zhou, **Huidong Xie**, Xueqi Guo, Qiong Liu, Albert J Sinusas, and Chi Liu. Dual-domain Iterative Network with Adaptive Data Consistency for Joint Denoising and Few-angle Reconstruction of Low-dose Cardiac SPECT. **In 2nd Workshop of Medical Image Learning with Limited & Noisy Data, MICCAI 2023**, Vancouver, Canada, Oct 8-12, 2023. [DOI]

6. Xiongchao Chen, Bo Zhou, **Huidong Xie**, Xueqi Guo, Qiong Liu, Albert J Sinusas, and Chi Liu. Cross-Domain Iterative Network for Simultaneous Denoising, Limited-angle Reconstruction, and Attenuation Correction of Cardiac SPECT. **In Workshop of Machine Learning in Medical Imaging, MICCAI 2023**, Vancouver, Canada, Oct 8-12, 2023. [DOI]

7. Xueqi Guo, Luyao Shi, Xiongchao Chen, Bo Zhou, Qiong Liu, **Huidong Xie**, Yi-Hwa Liu, Richard Palyo, Adam Liu, Edward J. Miller, Albert Sinusas, Bruce Spottiswoode, Chi Liu, Nicha Dvornek. TAI-GAN: Temporally and Anatomically Informed GAN for early-to-late frame conversion in dynamic cardiac PET motion correction. **Workshop of Simulation and Synthesis in Medical Imaging, MICCAI 2023**, Vancouver, Canada, Oct 8-12, 2023. [DOI]

8. Bo Zhou, Yu-Jung Tsai, Jiazhen Zhang, Xueqi Guo, **Huidong Xie**, Xiongchao Chen, Tianshun Miao, Yihuan Lu, James S. Duncan, and Chi Liu. Fast-MC-PET: A Novel Deep Learning-aided Motion Correction and Reconstruction Framework for Accelerated PET. **In 2023 Information Processing in Medical Imaging (IPMI)**, San Carlos De Bariloche, Argentina, June 19-23, 2023. [DOI]

9. Xiongchao Chen, Bo Zhou, **Huidong Xie**, Xueqi Guo, Jiazhen Zhang, Albert J. Sinusas, John Onofrey, and Chi Liu. Dual-Branch Squeeze-Fusion-Excitation Module for Cross-Modality Registration of Cardiac SPECT and CT. **In MICCAI 2022**, Singapore, Sept 18-22, 2022. [DOI]

10. **Huidong Xie**, Hongming Shan, Wenxiang Cong, Xiaohua Zhang, Shaohua Liu, Ruola Ning, and Ge Wang. Dual Network Architecture for Few-View CT - Trained on ImageNet Data and Transferred for Medical Imaging. **In Developments in X-Ray Tomography XII, SPIE 11113**, San Diego, California, United States, Aug 11-15, 2019. **(Oral)** [DOI]

Patent

1. **Huidong Xie**, Ge Wang, Hongming Shan, and Wenxiang Cong. Few-view CT Image Reconstruction System. WO2021051049A1, US20220375142A1. **(Issued)** [Google Patents]

Conference (Abstracts and Summaries)

1. **Huidong Xie**, Qiong Liu, Jun Hou, Tianqi Chen, Huixiao Chen, Henry S Park, David J Carlson, Chi Liu. Diffusion-Based PET Image Enhancement in Bgrt. **In AAPM 2025 Annual Meeting**, Washington, DC, USA, July 27-30, 2025. [Abstract]

2. **Huidong Xie**, Weijie Gan, Wei Ji, Menghua Xia, Jun Hou, Qiong Liu, Hongyu An, Ulugbek Kamilov, Ge Wang, Chi Liu. Dose-aware diffusion model with representation alignment for simultaneous 3D low-dose PET-CT imaging. **In SNMMI 2025 Annual Meeting**, New Orleans, Louisiana, USA, Jun 21-24, 2025. **(Oral) Freek J. Beekman Travel Award & SNMMI Travel Award.** [Abstract]

3. **Huidong Xie**, Weijie Gan, Xiongchao Chen, Bo Zhou, Qiong Liu, Menghua Xia, Xueqi Guo, Yi-Hwa Liu, Hongyu An, Ulugbek S. Kamilov, Ge Wang, Albert J. Sinusas, and Chi Liu. Dose-aware Diffusion Model for 3D Low-count Cardiac SPECT Image Denoising with Projection-domain Consistency. **In 2024 IEEE Medical Imaging Conference (MIC)**, Tampa, Florida, USA, Oct 26-Nov 2, 2024. **Oral**.

4. Yifan Zheng, Maël Millardet, **Huidong Xie**, Deepak Bharkhada, Vladimir Panin, Jorge Cabello, Noah Birge, Paul Schleyer, and Maurizio Conti. Respiratory Motion Correction Using FastPET. **In 2024 IEEE Medical Imaging Conference (MIC)**, Tampa, Florida, USA, Oct 26-Nov 2, 2024. **Oral**.

5. Menghua Xia, **Huidong Xie**, Qiong Liu, Liang Guo, Jinsong Ouyang, Reimund Bayerlein, Benjamin A. Spencer, Ramsey D. Badawi, Quanzheng Li, Georges EI Fakhri, and Chi Liu. Anatomically and Metabolically Informed Deep Learning Low-Count PET Image Denoising. **In 2024 IEEE Medical Imaging Conference (MIC)**, Tampa, Florida, USA, Oct 26-Nov 2, 2024. **Oral**.

6. Qiong Liu, Xueqi Guo, Yu-Jung Tsai, Jean-dominique Gallezot, Ming-Kai Chen, Liang Guo, **Huidong Xie**, Darko Pucar, Colin Young, Vladimir Y. Panin, Richard E. Carson, and Chi Liu. Patlak-Guided Self-Supervised Learning for Dynamic PET Denoising. **In 2024 IEEE Medical Imaging Conference (MIC)**, Tampa, Florida, USA, Oct 26-Nov 2, 2024. **Oral**.

7. Bo Zhou, Jun Hou, Tianqi Chen, Yinchi Zhou, Xiongchao Chen, **Huidong Xie**, Qiong Liu, Xueqi Guo, Menghua Xia, Yu-Jung Tsai, Vladimir Y. Panin, Takuya Toyonaga, James S. Duncan, and Chi Liu. POUR-Net: A Population-Prior-Aided Over-Under-Representation Network for Low-Count PET Attenuation Map Generation. **In 2024 IEEE Medical Imaging Conference (MIC)**, Tampa, Florida, USA, Oct 26-Nov 2, 2024. **Oral**.

8. Benjamin A. Spencer, Menghua Xia, **Huidong Xie**, Benjamin A. Spencer, Jinsong Ouyang, Georges EI Fakhri, Lorenzo Nardo, Chi Liu, and Ramsey D. Badawi. DIANA – Detectability Investgations using Artificial Nodal Additions. **In 2024 IEEE Medical Imaging Conference (MIC)**, Tampa, Florida, USA, Oct 26-Nov 2, 2024. **Poster**.

9. Xinyuan Zheng, Patrick Worhunsky, Qiong Liu, Bo Zhou, Xiongchao Chen, Xueqi Guo, **Huidong Xie**, Heng Sun, Jiazhen Zhang, Takuya Toyonaga, Adam P. Mecca, Ryan S. O'Dell, Christopher H. van Dyck, Richard Carson, Rajiv Radhakrishnan and Chi Liu. Generation of Synthetic brain PET images of synaptic density from MRI and FDG-PET using a Multi-stage U-Net. **In 2024 IEEE Medical Imaging Conference (MIC)**, Tampa, Florida, USA, Oct 26-Nov 2, 2024. **Poster**.

10. Tianqi Chen, Jun Hou, **Huidong Xie**, Xiongchao Chen, Yinchi Zhou, Menghua Xia, James S. Duncan, Chi Liu, and Bo Zhou. 2.5D Multi-view Averaging Diffusion Model for 3D Medical Image Translation: Application to Low-count PET Reconstruction with CT-less AC. **In 2024 IEEE Medical Imaging Conference (MIC)**, Tampa, Florida, USA, Oct 26-Nov 2, 2024. **Poster**.

11. Jun Hou, Tianqi Chen, Yinchi Zhou, Xiongchao Chen, **Huidong Xie**, Qiong Liu, Menghua Xia, Vladimir Y. Panin, Chi Liu, and Bo Zhou. An Investigation on Cross-Tracer Generalizability of Deep Learning-based PET Attenuation Correction. **In 2024 IEEE Medical Imaging Conference (MIC)**, Tampa, Florida, USA, Oct 26-Nov 2, 2024. **Poster**.

12. **Huidong Xie**, Weijie Gan, Bo Zhou, Ming-Kai Chen, Michal Kulon, Annemarie Boustani, Xiongchao Chen, Qiong Liu, Xueqi Guo, Menghua Xia, Liang Guo, Hongyu An, Ulugbek S. Kamilov, Hanzhong Wang, Biao Li, Axel Rominger, Kuangyu Shi, Ge Wang, Chi Liu. Dose-aware diffusion model for 3D low-dose PET denoising: A multi-institutional validation with reader study and real low-dose data. **In 2024 SNMMI Annual Meeting**, Toronto, ON, Canada, Jun 8-11, 2024. **(Oral) First-place Freek J. Beekman Young Investigator Award & SNMMI Travel Award.** [Abstract]

13. **Huidong Xie**, Alaa Alashi, Stephanie Thorn, Xiongchao Chen, Bo Zhou, Albert Sinusas, Chi Liu. Increasing angular sampling for dedicated cardiac SPECT imaging guided by deep learning: Validation with human data. **In 2024 SNMMI Annual Meeting**, Toronto, ON, Canada, Jun 8-11, 2024. **Oral.** [Abstract]

14. Menghua Xia, **Huidong Xie**, Qiong Liu, Bo Zhou, Hanzhong Wang, Biao Li, Axel Rominger, Kuangyu Shi, Georges EI Fakhri, Chi Liu. Lesion-perceived and quantification-consistent deep learning PET image denoising. **In 2024 SNMMI Annual Meeting**, Toronto, ON, Canada, Jun 8-11, 2024. **Oral.** [Abstract]

15. Yinchi Zhou, **Huidong Xie**, Bo Zhou, Hanzhong Wang, Biao Li, Axel Rominger, Kuangyu Shi, Chi Liu. FedDD: A Federated Fine-Tuning Diffusion Model for Low-count PET Denoising. **In 2024 SNMMI Annual Meeting**, Toronto, ON, Canada, Jun 8-11, 2024. **(Poster)** [Abstract]

16. Xueqi Guo, Vijay Shah, David Pigg, Guenther Platsch, Xiongchao Chen, **Huidong Xie**, Weijie Gan, Chi Liu, Lauren Partin, Bruce Spottiswoode. Generative uptake time correction for SUV harmonization in whole-body PET. **In 2024 SNMMI Annual Meeting**, Toronto, ON, Canada, Jun 8-11, 2024. **(Poster)** [Abstract]

17. Qiong Liu, Yu-Jung Tsai, Xueqi Guo, Liang Guo, Bo Zhou, Menghua Xia, **Huidong Xie**, Xiongchao Chen, Xinyuan Zheng, Kristin Schmiedehausen, Le William, Kuangyu Shi, Annemarie Boustani, Ming-Kai Chen, Harriet Kluger, Bernadette Marquez-Nostra, Chi Liu. Prompt Attention Convolution Net (PAC-Net) for low-count Zr-89 CD8 ImmunoPET denoising. **In 2024 SNMMI Annual Meeting**, Toronto, ON, Canada, Jun 8-11, 2024. **(Poster)** [Abstract]

18. **Huidong Xie***, Weijie Gan*, Bo Zhou, Xiongchao Chen, Qiong Liu, Xueqi Guo, Liang Guo, Hongyu An, Ulugbek S. Kamilov, Ge Wang, Chi Liu. DDPET-3D: Dose-aware Diffusion Model for 3D Ultra Low-dose PET Imaging. **In 2023 IEEE Medical Imaging Conference (MIC) Low-dose PET Imaging Challenge Workshop**, Vancouver, British Columbia, Canada, Nov 11, 2023.

19. **Huidong Xie**, Liang Guo, Xueqi Guo, Qiong Liu, Bo Zhou, Xiongchao Chen, Ge Wang, Albert J. Sinusas, and Chi Liu. Self-supervised Noise-aware Network for Dynamic Rubidium-82 Cardiac PET Image Denoising. **In 2023 IEEE Medical Imaging Conference (MIC)**, Vancouver, Canada, Nov 4-11, 2023. **(Oral)** [Abstract]

20. Bo Zhou, **Huidong Xie**, Qiong Liu, Xiongchao Chen, Xueqi Guo, S. Kevin Zhou, Biao Li, Axel Rominger, Kuangyu Shi, James S. Duncan, and Chi Liu. FedFTN: Personalized Federated Learning with Deep Feature Transformation Network for Multi-institutional Low-count PET Denoising. **In 2023 IEEE Medical Imaging Conference (MIC)**, Vancouver, Canada, Nov 4-11, 2023. **(Oral)**

21. Qiong Liu, Yu-Jung Tsai, Jean-Dominique Gallezot, Xueqi Guo, Ming-Kai Chen, Darko Pucar, Colin Young, Vladimir Panin, Tianshun Miao, **Huidong Xie**, Xiongchao Chen, Bo Zhou, Richard Carson, and Chi Liu. Population-based Deep Image Prior for Dynamic PET Denoising. **In 2023 IEEE Medical Imaging Conference (MIC)**, Vancouver, Canada, Nov 4-11, 2023. **(Oral)**

22. **Huidong Xie**, Alexandre Velo, Xueqi Guo, Bo Zhou, Xiongchao Chen, Yu-jung Tsai, Tianshun Miao, Qiong Liu, Albert J. Sinusas, and Chi Liu. Self-supervised Positron Range Correction for Dynamic Rubidium-82 Cardiac PET Imaging. **In SNMMI 2023 Annual Meeting**, Chicago, Illinois, USA, June 24-27, 2023. **(Poster)** [Abstract]

23. Xiongchao Chen, Bo Zhou, **Huidong Xie**, Xueqi Guo, Qiong Liu, Albert J. Sinusas, Chi Liu. Deep Learning-Based Attenuation Map Generation for Low-Dose and Few-Angle Dedicated Cardiac SPECT. **In SNMMI 2023 Annual Meeting**, Chicago, Illinois, USA, June 24-27, 2023. **(Poster)** [Abstract]

24. Xueqi Guo, Luyao Shi, Xiongchao Chen, Qiong Liu, **Huidong Xie**, Yi-Hwa Liu, Richard Palyo, Adam Liu, Bruce Spottiswoode, Chi Liu, and Nicha C. Dvornek. Early-to-late frame conversion using temporal feature informed GAN for cardiac dynamic PET motion correction. **In SNMMI 2023 Annual Meeting**, Chicago, Illinois, USA, June 24-27, 2023. **(Oral)** [Abstract]

25. Qiong Liu, Tiantian Shi, Paul Gravel, Ramesh Fazzone-Chettiar, Koen Van Laere, Xueqi Guo, **Huidong Xie**, Xiongchao Chen, Yi-Hwa Liu, Richard Carson, Chi Liu, and Edward Miller. Dynamic Imaging and Tracer Kinetic Modeling of 18F-flutemetamol PET for Cardiac Amyloidosis Patients. **In SNMMI 2023 Annual Meeting**, Chicago, Illinois, USA, June 24-27, 2023. **(Oral)** [Abstract]

26. **Huidong Xie**, Qiong Liu, Bo Zhou, and Chi Liu. Noise-aware Network for Low-dose PET Denoising. **In 2022 IEEE Medical Imaging Conference (MIC) Low-dose PET Imaging Challenge Workshop**, Milano, Italy, Nov 12, 2022. [Link]

27. **Huidong Xie**, Zhao Liu, Luyao Shi, Kathleen Greco, Xiongchao Chen, Bo Zhou, Attila Feher, John C. Stendahl, Nabil Boutagy, Albert J. Sinusas, and Chi Liu. Segmentation-free Partial Volume Correction for Cardiac SPECT using Deep Learning. **In SNMMI 2022 Annual Meeting**, Vancouver, British Columbia, Canada, Jun 11-14, 2022. **(Oral)** [Abstract]

28. Alexandre Velo, Peng Fan, **Huidong Xie**, Xiongchao Chen, Michael Ljungberg, and Chi Liu. 99mTc/123I Dual-Isotope Scatter and Crosstalk Correction for a CZT SPECT with Varying Tracer Distributions: A Monte Carlo Simulation Study. **In SNMMI 2022 Annual Meeting**, Vancouver, British Columbia, Canada, Jun 11-14, 2022. **(Poster)** [Abstract]

29. Xiongchao Chen, Bo Zhou, **Huidong Xie**, Tianshun Miao, Edward J. Miller, Albert J. Sinusas, and Chi Liu. DuDoSS: Deep-Learning-Based Dual-Domain Sinogram Synthesis from Sparsely Sampled Projections of Cardiac SPECT. **In SNMMI 2022 Annual Meeting**, Vancouver, British Columbia, Canada, Jun 11-14, 2022. **(Oral, third place young investigator award)** [Abstract]

30. **Huidong Xie**, Stephanie Thorn, Yi-Hwa Liu, Supum Lee, Zhao Liu, Ge Wang, Albert J. Sinusas, and Chi Liu. Improvement of Few-Angle Dedicated Cardiac SPECT Reconstruction using Transformer. **In 2021 IEEE Medical Imaging Conference (MIC)**, Virtual, Oct 16-23, 2021. **(Oral, best student paper award candidate)**

31. Sijin Ren, Juan Liu, **Huidong Xie**, Takuya Toyonaga, Niloufarsadat Mirian, Ming-Kai Chen, Mariam Aboian, Richard Carson, and Chi Liu. Super-resolution PET Brain Imaging using Deep Learning. **In 2021 IEEE Medical Imaging Conference (MIC)**, Virtual, Oct 16-23, 2021. **(Poster)** [DOI]

32. Xiongchao Chen, Bo Zhou, **Huidong Xie**, Luyao Shi, Hui Liu, and Chi Liu. Investigation of Direct and Indirect Approaches of Deep-Learning-Based Attenuation Correction for General Purpose and Dedicated Cardiac SPECT Scanners. **In 2021 IEEE Medical Imaging Conference (MIC)**, Virtual, Oct 16-23, 2021. **(Oral)** [DOI]

33. **Huidong Xie**, Stephanie Thorn, Hui Liu, Zhao Liu, Xiongchao Chen, Supum Lee, Ge Wang, Albert J. Sinusas, and Chi Liu. Increasing angular sampling through deep learning for GE Alcyone dedicated cardiac SPECT. **In SNMMI 2021 Annual Meeting**, Virtual, Jun 11-15, 2021. **(Poster)** [Abstract]

34. **Huidong Xie**, Hongming Shan, and Ge Wang. 3D Few-View CT Image Reconstruction with Deep Learning. **In IEEE 17th International Symposium on Biomedical Imaging Workshops (ISBI Workshops)**, Iowa City, Iowa, United States, Apr 3-7, 2020. **(Oral)** [DOI]

Teaching Experience

- **Teaching Assistant in BENG 280, Sophomore Seminar in Biomedical Engineering, Yale** Fall 2021
  This undergraduate-level course introduces different fields in biomedical engineering. Instructor to contact: Professor Rong Fan
- **Teaching Assistant in BMED 6590, Medical Imaging, RPI** Fall 2019
  This graduate-level course introduces some of the most popular imaging modalities (CT, PET/SPECT, MRI, Ultrasound, Optical), and deep learning methods for medical imaging problems. I gave 5 lectures independently (2 hours each) on deep learning methods for medical imaging. Reported here, it was the first innovative effort to incorporate AI into the medical imaging course at RPI. Instructor to contact: Professor Ge Wang
- **Teaching Assistant in CSCI 1190, Beginning Programming for Engineers, RPI** Fall 2019
  This undergraduate-level course introduces elementary programming concepts using MATLAB for different engineering problems.
- **Research Advisor in The STEP Program, RPI** Spring 2019
  Supervised a group of high-school students for a low-dose CT denoising project using iterative methods. Their work was presented at the STEP state conference in 2019. Funded by the New York State Department of Education, its mission is to assist historically underrepresented and economically disadvantaged students in preparing for college. All of the high school students I mentored in STEP went on to pursue higher education in top engineering programs, mostly in biomedical engineering, including one who was accepted to an Ivy League school. Instructor to contact: Professor Ge Wang

Professional Activities

- **Journal Reviewer:**
  IEEE Transactions on Medical Imaging
  IEEE Transactions on Radiation and Plasma Medical Sciences
  IEEE Transactions on Neural Networks and Learning Systems
  IEEE Transactions on Emerging Topics in Computational Intelligence
  IEEE Transactions on Automation Science and Engineering
  IEEE Transactions on Industrial Electronics
  IEEE Journal of Selected Topics in Signal Processing
  IEEE Journal of Biomedical and Health Informatics
  IEEE Access
  IEEE MultiMedia
  ACM Computing Surveys
  British Journal of Radiology
  Visual Computing for Industry, Biomedicine, and Art
  Journal of Medical Systems
  CAAI Transactions on Intelligence Technology
  BMC Medical Imaging
  Mathematical Biosciences and Engineering
  Scientific Reports
  International Journal of Intelligent Systems
  Artificial Intelligence In Medicine
  Medical Physics
- **Conference Reviewer:**
  MICCAI Educational Challenge 2022
  MICCAI 2023
  MED-NeurIPS 2023 (NeurIPS 2023 workshop)
- **Society Memberships:**
  IEEE (Since 2018); SPIE (Since 2019); MICCAI (Since 2020); SNMMI (Since 2021)
- **Other:**
  Diffusion model teaching material that I wrote for the 2023 MICCAI Education Challenge. [Link] 2023
  Administrator of 2 Linux servers, AXIS Lab, RPI. Dec 2018 – Jun 2020

Skills Summary

- **Technical skills:** Python; MATLAB; TensorFlow; PyTorch; LaTeX; Linux; Medical Imaging Modalities (CT, SPECT, PET, MRI, Ultrasound); Deep Learning; Machine Learning; R; C; C++
- **Software:** GraphPad Prism; Adobe Illustrator; Siemens E7 Reconstruction Tools; Solidworks; Siemens NX
- **Languages:** Mandarin; Cantonese; English

References

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