

Xueqi Guo

✉ xueqi.guo@yale.edu

☎ (203) 508-2857

📍 New Haven, CT 06511

🌐 [Homepage](#)

Education

Yale University

New Haven, CT

Ph.D. in Engineering and Applied Science

Aug 2019 - Mar 2024 (Expected)

- GPA: 4.0/4.0 (All Honors), Research Focus: AI in computer vision and medical imaging
- Coursework: Deep Learning Theory and Applications, Artificial Intelligence, Natural Language Processing, Introductory & Intermediate Machine Learning, Biomedical Data Analysis

Shanghai Jiao Tong University

Shanghai, China

B.S.E. in Biomedical Engineering; Minored in Music

Sept 2015 - July 2019

- GPA: 3.75/4.0 (88.15/100), Ranking: 4/56
- Coursework: Algorithm and Data Structure, Probability and Statistics, Fundamental of Biomedical Statistics, Biomedical Image Processing & Analysis

Experience

Siemens Healthineers

Knoxville, TN

AI Software Engineering Intern

June 2023 - Aug 2023

- Enhanced a Generative Adversarial Network (GAN) for time correction in whole-body PET scans through 2.5D temporal encoding and time-aware embedding techniques with the PyTorch framework.
- Achieved substantial performance enhancements over the baseline GAN and Diffusion Model, yielding robust recovery of lesion values and achieving the desired visual fidelity.
- Completed an internal invention disclosure with a patent application and a research paper in submission.

Siemens Healthineers

Malvern, PA

Image Analytics Intern

June 2022 - Aug 2022

- Developed a weakly supervised abnormality segmentation method by enhancing the Self-supervised Equivariant Attention Mechanism through up-sampling, adaptive thresholding, and augmented loss functions with the PyTorch framework.
- Achieved 13.3% enhancement in the mean dice score, demonstrating substantial performance gains on a large internal CT dataset with 68 distinct disease types and over 60 abnormal patterns.
- Published [paper](#) in the 20th IEEE International Symposium on Biomedical Imaging (ISBI), 2023.

Yale University

New Haven, CT

Graduate Research Assistant

Sept 2019 - Present

- Improved dynamic PET registration by spatial-temporal analysis with a bottleneck convolutional long short-term memory (LSTM) on the Keras platform; accelerated inference 460 times faster than the traditional baseline.
- Proposed a novel kinetic-model-driven loss as the regularization of registration network optimization; significantly improved motion estimation accuracy and reduced parametric fitting error.
- Pioneered the development of an innovative early-to-late frame conversion approach for cardiac PET registration, leveraging temporally and anatomically informed GAN with the PyTorch framework; achieved high quantitative similarity and improved current conventional registration.

Publications [Google Scholar]

Journal

- X. Guo, B. Zhou, X. Chen, M.-K. Chen, C. Liu, and N. C. Dvornek. MCP-Net: Introducing Patlak Loss Optimization to Whole-body Dynamic PET Inter-frame Motion Correction. *IEEE Transactions on Medical Imaging (TMI)* (IF=11.037), 2023. [\[DOI\]](#)
- X. Guo, B. Zhou, D. Pigg, B. Spottiswoode, M. Casey, C. Liu, and N. C. Dvornek. Unsupervised deep learning

- inter-frame motion correction for whole-Body dynamic PET using convolutional long short-term memory in a convolutional neural network. *Medical Image Analysis (IF=13.828)*, 2022. [DOI]
- **X. Guo**, J. Wu, M.-K. Chen, Q. Liu, J. Onofrey, Y. Pang, D. Pigg, M. Casey, N. C. Dvornek, and C. Liu. Inter-pass motion correction for whole-Body dynamic parametric PET imaging. *IEEE Transactions on Radiation and Plasma Medical Sciences (TRPMS)*, (IF=4.44), 2022. [DOI]
 - **X. Guo**, S. Tinaz, and N. C. Dvornek. Characterization of Early Stage Parkinson's Disease from Resting-state fMRI Data Using a Long Short-term Memory Network. *Frontiers in Neuroimaging*, 2022. [DOI]
 - **X. Guo**, L. Shi, X. Chen, Q. Liu, B. Zhou, H. Xie, Y.-H. Liu, R. Palyo, E. Miller, A. Sinusas, L. H. Staib, B. Spottiswoode, C. Liu, and N. 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. Under review at *Medical Image Analysis*. [arXiv]
 - X. Chen, B. Zhou, H. Xie, **X. Guo**, J. Zhang, J. S. Duncan, E. J. Miller, A. J. Sinusas, J. A. Onofrey, and C. Liu. DuSFE: Dual-Channel Squeeze-Fusion-Excitation Co-Attention for Cross-Modality Registration of Cardiac SPECT and CT. *Medical Image Analysis (IF=13.828)*, 2023. [DOI]
 - B. Zhou, H. Xie, Q. Liu, X. Chen, **X. Guo**, Z. Feng, J. Hou, S. Kevin Zhou, B. Li, A. Rominger, K. Shi, J. S. Duncan, and C. Liu. FedFTN: Personalized federated learning with deep feature transformation network for multi-institutional low-count PET denoising. *Medical Image Analysis (IF=13.828)*, 2023. [DOI]
 - T. Miao, B. Zhou, J. Liu, **X. Guo**, X. Chen, M.-K. Chen, J. Wu, R. Carson, and C. Liu. Generation of Whole-Body FDG Parametric Ki Images from Static PET Images Using Deep Learning. *IEEE TRPMS (IF=4.44)*, 2023. [DOI]
 - H. Xie, Q. Liu, B. Zhou, X. Chen, **X. Guo**, and C. Liu. Unified Noise-aware Network for Low-count PET Denoising with Varying Count Levels. *IEEE TRPMS (IF=4.44)*, 2023. [DOI]
 - B. Zhou, T. Miao, N. Mirian, X. Chen, H. Xie, Z. Feng, **X. Guo**, X. Li, S. K. Zhou, J. S. Duncan, and C. Liu. Federated Transfer Learning for Low-dose PET Denoising: A Pilot Study with Simulated Heterogeneous Data. *IEEE TRPMS (IF=4.44)*, 2022. [DOI]

Conference.....

- **X. Guo**, B. Zhou, X. Chen, C. Liu, and N. C. Dvornek. MCP-Net: Inter-frame Motion Correction with Patlak Regularization for Whole-Body Dynamic PET. In the 25th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI), Singapore, Sept 18-22, 2022. (**Early acceptance top 13%**, Poster)
- **X. Guo**, L. Shi, X. Chen, B. Zhou, Q. Liu, H. Xie, Y.-H. Liu, R. Palyo, E. Miller, A. Sinusas, B. Spottiswoode, C. Liu, and N. C. Dvornek. TAI-GAN: Temporally and Anatomically Informed GAN for early-to-late frame conversion in dynamic cardiac PET motion correction. In the 8th International Workshop on Simulation and Synthesis in Medical Imaging (SASHIMI, in conjunction with MICCAI 2023), Vancouver, BC, Canada, Oct 8-12, 2023. (Poster)
- **X. Guo**, M. Abdi, Y. Shinagawa, A. Jerebko, and S. Farhand. SEAM-STRESS: A weakly supervised framework for interstitial lung disease segmentation in chest CT. In the 20th IEEE International Symposium on Biomedical Imaging (ISBI), Cartagena de Indias, Colombia, Apr 18-21, 2023. (Virtual poster)
- **X. Guo**, L. Shi, X. Chen, Q. Liu, H. Xie, B. Zhou, Y.-H. Liu, R. Palyo, A. Liu, E. J. Miller, A. J. Sinusas, B. Spottiswoode, C. Liu, and N. C. Dvornek. Early-to-late frame conversion using a temporally informed GAN for cardiac dynamic PET motion correction. In Society of Nuclear Medicine and Molecular Imaging (SNMMI) Annual Meeting, Chicago, IL, United States, June 24-27, 2023. (Oral)
- **X. Guo**, C. Liu, and N. C. Dvornek. A Patlak-regularized deep learning inter-frame motion correction framework for whole-body dynamic PET. In SNMMI Annual Meeting, Vancouver, BC, Canada, Jun 11-14, 2022. (Oral)
- **X. Guo**, B. Zhou, D. Pigg, B. Spottiswoode, M. Casey, C. Liu, and N. C. Dvornek. Inter-frame motion correction for whole-body parametric imaging using long short-term memory in a deep convolutional framework. In 2021 IEEE Medical Imaging Conference (MIC), Virtual, Oct 16-23, 2021. (**Mini Oral, 2nd Place Student Paper Award Poster Competition**).
- **X. Guo**, J. Wu, M.-K. Chen, J. Onofrey, Y. Pang, D. Pigg, M. Casey, N. C. Dvornek and C. Liu. Inter-pass motion correction for whole-body dynamic parametric PET imaging. In SNMMI Annual Meeting, Virtual, Jun 11-15, 2021. (Poster)
- B. Zhou, Y.-J. Tsai, J. Zhang, **X. Guo**, H. Xie, X. Chen, T. Miao, Y. Lu, J. S. Duncan, and C. Liu. Fast-MC-PET: A Novel Deep Learning-aided Motion Correction and Reconstruction Framework for Accelerated PET. In the 28th international conference on Information Processing in Medical Imaging (IPMI), San Carlos de Bariloche,

Argentina, June 18-23, 2023. (Poster)

- H. Xie, B. Zhou, X. Chen, **X. Guo**, S. Thorn, Y.-H. Liu, G. Wang, A. Sinusas, and C. Liu. Transformer-based Dual-domain Network for Few-view Dedicated Cardiac SPECT Image Reconstructions. In the 26th MICCAI, Vancouver, Canada, Oct 18-22, 2023. (**Early acceptance top 13%**)
- X. Chen, B. Zhou, H. Xie, **X. Guo**, Q. Liu, A. Sinusas, and C. Liu. Cross-Domain Iterative Network for Simultaneous Denoising, Limited-angle Reconstruction, and Attenuation Correction of Cardiac SPECT. In the 14th Machine Learning in Medical Imaging Workshop (MLMI, in conjunction with MICCAI 2023), Vancouver, BC, Canada, Oct 8-12, 2023. (Oral)
- X. Chen, B. Zhou, H. Xie, **X. Guo**, Q. Liu, A. Sinusas, and C. Liu. Dual-domain Iterative Network with Adaptive Data Consistency for Joint Denoising and Few-angle Reconstruction of Low-dose Cardiac SPECT. In the 2nd Workshop of Medical Image Learning with Limited & Noisy Data (MILLanD, in conjunction with MICCAI 2023), Vancouver, BC, Canada, Oct 8-12, 2023. (Poster)
- Q. Liu, T. Shi, P. Gravel, R. Fazzzone-Chettiar, **X. Guo**, H. Xie, X. Chen, K. V. Laere, Y.-H. Liu, R. E. Carson, C. Liu, and Edward J. Miller. Dynamic Imaging and Tracer Kinetic Modeling of 18F-flutemetamol PET for ATTR Cardiac Amyloidosis Patients. In SNMMI Annual Meeting, Chicago, IL, United States, June 24-27, 2023. (Oral, 2nd Place Young Investigator Award)
- X. Chen, B. Zhou, H. Xie, **X. Guo**, Q. Liu, A. J. Sinusas, and Chi Liu. Deep Learning-Based Attenuation Map Generation for Low-Dose and Few- Angle Dedicated Cardiac SPECT. In SNMMI Annual Meeting, Chicago, IL, United States, June 24-27, 2023. (Poster)
- H. Xie, A. Velo, **X. Guo**, B. Zhou, X. Chen, Y.-J. Tsai, T. Miao, Q. Liu, A. J. Sinusas, and Chi Liu. Self-supervised Positron Range Correction for Dynamic Rubidium-82 Cardiac PET Imaging. In SNMMI Annual Meeting, Chicago, IL, United States, June 24-27, 2023. (Poster)
- X. Chen, B. Zhou, H. Xie, **X. Guo**, J. Zhang, A. Sinusas, J. Onofrey, and C. Liu. Dual-Branch Squeeze-Fusion-Excitation Module for Cross-Modality Registration of Cardiac SPECT and CT. In the 25th MICCAI, Singapore, Sept 18-22, 2022. (Poster)
- Q. Liu, Y.-J. Tsai, **X. Guo**, J.-D. Gallezot, M.-K. Chen, R. Carson, and C. Liu. Prompts-matched Deep Learning Denoising for Standard-Count and Low-Count Whole body Dynamic PET. In 2022 IEEE MIC, Milano, Italy, Nov 05-12, 2022. (Oral)
- Y.-J. Tsai, **X. Guo**, J. Onofrey, Y. Lu, K. Fontaine and C. Liu. Event-by-event non-rigid respiratory motion correction for multi-pass continuous-bed-motion whole-body parametric PET imaging. In 2021 IEEE MIC, Virtual, Oct 16-23, 2021. (Oral)
- Z. Liu, S. Thorn, J. Wu, **X. Guo**, P. G. de Rubio Cruz, R. Carson, A. Sinusas and C. Liu. Assessment of lower extremities flow using dynamic Rb-82 PET: Acquisition protocols and quantification methods. In SNMMI Annual Meeting, Virtual, Jun 11-15, 2021. (Oral)
- G. J. Gang, **X. Guo**, J. W. Stayman. Performance analysis for nonlinear tomographic data processing. In 15th International Meeting on Fully Three-Dimensional Image Reconstruction in Radiology and Nuclear Medicine, Philadelphia, PA, United States, Jun 2-6, 2019. (Oral)
- G. J. Gang, K. Cheng, **X. Guo**, J. W. Stayman. Generalized prediction framework for reconstructed image properties using neural networks. In SPIE Medical Imaging, 2019: Physics of Medical Imaging, San Diego, CA, United States, Feb 16-21, 2021. (Oral)

Patent.....

- **X. Guo**, D. Pigg, L. Partin, V. Shah. Methods and Apparatus for Generating Images for an Uptake Time Using Machine Learning Based Processes. US Patent pending.
- J. Zhao, Z. Wang, Q. Dai, **X. Guo**, H. Lin, X. Zhang, T. Xu. Preoperative auxiliary planning device based on virtual reality. China Patent CN110547869A.

Skills

- Programming: Python (PyTorch, TensorFlow, Keras, Numpy, Pandas), Matlab, C#, C++, C, Java, JavaScript, \LaTeX
- Languages: English, Mandarin Chinese, Japanese

Professional Activities

Journal Reviews

- IEEE TMI (IF=11.037, 2 submissions)
- Computerized Medical Imaging and Graphics (IF=5.7, 4 submissions)
- Eye and Brain (IF=4.4)
- Neuropsychiatric Disease and Treatment (IF=3.2)

Conference Reviews

- Medical Imaging with Deep Learning (MIDL) 2024 (4 submissions)
- International Conference on Information Processing in Computer-Assisted Interventions (IPCAI) 2024 (2 submissions)
- MICCAI 2023 (5 submissions)
- The Workshop on Machine Learning in Clinical Neuroimaging (MLCN), in MICCAI 2022-2023 (6 submissions)
- MICCAI Educational Challenge, 2022-2023 (6 submissions)

Membership

- IEEE, MICCAI, SNMMI

Mentoring

- 2022-2023, Adam Liu, Amity High School student

Invited Talks

- MICCAI Student Board 3-min Thesis, Oct 2023
- Yale Cardiovascular Medicine Imaging Retreat, Sept 2023
- Connecticut Area Medical Physics Society Spring Meeting, May 2023
- Learn2Reg Workshop in MICCAI, Sept 2022
- Yale Department of Biomedical Engineering Seminar, Sept 2022

Diversity Commitment

- Yale Graduate Society of Women Engineers Communications Chair

Honors and Awards

- 2023 MICCAI Student Board 3-min Thesis First Place
- 2022 Yale Conference Travel Fellowship
- 2022 MICCAI NIH Participation Award
- 2022 Chinese American SNMMI Third Place Young Investigator Award
- 2021 IEEE MIC Fourth Place Christopher J. Thompson Best Student Paper Award
- 2021 IEEE MIC Trainee Grant
- 2021 MedHacks FastForward U Sponsor Prize; Track Prize Finalist (**Top 5**)
- 2019 Yale Ph.D. fellowship
- 2019 Outstanding Graduates of Shanghai Jiao Tong University (**Top 5%**)
- 2018 First-Class Academic Excellence Scholarship of Shanghai Jiao Tong University (**Top 2%**)
- 2018 National Undergraduate Biomedical Engineering Innovation Design Competition: Second Class Prize

Teaching

Yale BENG 352 Biomedical Signals and Images

Spring 2021-2022

- Discussion section leader; assignment grader

Yale BENG 355L Physiological Systems Lab

Fall 2021

- Lab leader