



Linxi Shi

Sr Res Scientist-Physical, Rad/Radiological Sciences Laboratory

Bio

BIO

I am a medical physicist and imaging scientist with over a decade of experience in CT imaging, algorithm development, and AI-driven reconstruction. I earned my Ph.D. in Medical Physics from the Georgia Institute of Technology, where I developed novel artifact corrections and reconstruction algorithms for cone beam computed tomography, focusing on applications in breast cancer diagnosis and image-guided radiation therapy.

Following my doctoral studies, I completed a postdoctoral fellowship with the Stanford Cancer Imaging Training (SCIT) Program. Currently, I serve as a Senior Research Scientist in the Radiological Sciences Laboratory at Stanford University. My research focuses on developing advanced clinical translational x-ray and CT imaging systems, including algorithm design for tomographic reconstruction, artifact correction, and image processing for various imaging modalities.

HONORS AND AWARDS

- Women in Imaging Award, 15th Fully Three-Dimensional Image Reconstruction in Radiology and Nuclear Medicine (2019)
- Helena Anna Henzl-Gabor Young Women in Science Fellowship, Stanford University (2018)
- NIH T32 Funding Grant (Stanford Cancer Imaging Training), Stanford University (2017)
- Winner of Young Investigator, AAPM North East Chapter (2015)
- Trustee of Award for Outstanding Student, Worcester Polytechnic Institute (2010)

EDUCATION AND CERTIFICATIONS

- Postdoctoral Fellow, Stanford University , Radiology (2020)
- PhD, Georgia Institute of Technology , Medical Physics (2017)
- MS, Georgia Institute of Technology , Medical Physics (2015)
- BS, Beijing University of Technology , Biomedical Engineering (2010)

LINKS

- Google Scholar: <https://scholar.google.com/citations?user=Yj3eIB4AAAAJ&hl=en>
- LinkedIn: <https://www.linkedin.com/in/linxi-shi-204aa228/>

Publications

PUBLICATIONS

- **Characterization of Thick Selenium Layers for Dual-Layer X-ray Imaging.** *IEEE transactions on nuclear science*

- Swaby, A., Hellier, K., Shi, L., Wang, A. S., Abbaszadeh, S.
2026
- **Monitoring of PET-Avid OAR Moving in the Treatment Area During Biology-guided Radiotherapy Delivery**
Surucu, M., Han, B., Bal, H., Shi, L., Xu, S., Voronenko, Y., Bal, G., Schmall, J., Kovalchuk, N.
ELSEVIER IRELAND LTD.2024: S4408-S4409
 - **Synthesizing High-Resolution Dual-Energy Radiographs from Coronary Artery Calcium CT Images.** *Proceedings of SPIE--the International Society for Optical Engineering*
Shaker, K., Shi, L., Hsieh, S., Swaby, A., Abbaszadeh, S., Wang, A. S.
2024; 12925
 - **Synthesizing High-Resolution Dual-Energy Radiographs from Coronary Artery Calcium CT Images**
Shaker, K., Shi, L., Hsieh, S., Swaby, A., Abbaszadeh, S., Wang, A. S.
edited by Fahrig, R., Sabol, J. M., Li, K.
SPIE-INT SOC OPTICAL ENGINEERING.2024
 - **Single-shot quantitative x-ray imaging using a primary modulator and dual-layer detector.** *Medical physics*
Shi, L., Bennett, N. R., Vezeridis, A., Kothary, N., Wang, A. S.
2023
 - **High resolution imaging with focused kV x-rays for small animal radio-neuromodulation.** *Medical physics*
Shi, L., Bennett, N. R., Nguyen, E., MacDonald, C., Wang, A., Liu, W.
2023
 - **Single-Shot Quantitative X-ray Imaging Using a Primary Modulator and Dual-Layer Detector: Simulation and Phantom Studies.** *Proceedings of SPIE--the International Society for Optical Engineering*
Shi, L., Bennett, N. R., Wang, A. S.
2022; 12031
 - **Single-Shot Quantitative X-ray Imaging Using a Primary Modulator and Dual-Layer Detector: Simulation and Phantom Studies**
Shi, L., Bennett, N., Wang, A. S.
edited by Zhao, W., Yu, L.
SPIE-INT SOC OPTICAL ENGINEERING.2022
 - **Single-pass metal artifact reduction using a dual-layer flat panel detector.** *Medical physics*
Shi, L., Bennett, N. R., Shiroma, A., Sun, M., Zhang, J., Colbeth, R., Star-Lack, J., Lu, M., Wang, A. S.
2021
 - **Characterization of x-ray focal spots using a rotating edge** *JOURNAL OF MEDICAL IMAGING*
Shi, L., Bennett, N., Wang, A. S.
2021; 8 (2)
 - **Characterization of x-ray focal spots using a rotating edge.** *Journal of medical imaging (Bellingham, Wash.)*
Shi, L., Bennett, N. R., Wang, A. S.
2021; 8 (2): 023502
 - **Dual energy chest x-ray for improved COVID-19 detection using a dual-layer flat-panel detector: Simulation and phantom studies**
Shi, L., Bennett, N., Lu, M., Sun, M., Zhang, J., Star-Lack, J., Tsai, E. B., Guo, H., Wang, A. S.
edited by Bosmans, H., Zhao, W., Yu, L.
SPIE-INT SOC OPTICAL ENGINEERING.2021
 - **Characterization and Potential Applications of a Dual-Layer Flat-Panel Detector.** *Medical physics*
Shi, L., Lu, M., Bennett, N. R., Shapiro, E., Zhang, J., Colbeth, R., Star-Lack, J., Wang, A. S.
2020
 - **Dedicated cone-beam breast CT using laterally-shifted detector geometry: Quantitative analysis of feasibility for clinical translation.** *Journal of X-ray science and technology*
Vedantham, S., Tseng, H., Konate, S., Shi, L., Karellas, A.
2020

- **Comparative Study of Dual Energy Cone-Beam CT using a Dual-Layer Detector and kVp Switching for Material Decomposition.** *Proceedings of SPIE--the International Society for Optical Engineering*
Shi, L., Bennett, N. R., Shapiro, E., Colbeth, R. E., Star-Lack, J., Lu, M., Wang, A. S.
2020; 11312
- **Projection-domain metal artifact correction using a dual layer detector.** *Proceedings of SPIE--the International Society for Optical Engineering*
Shi, L., Robert Bennett, N., Star-Lack, J., Lu, M., Wang, A. S.
2020; 11312
- **Dedicated cone -beam breast CT using laterally -shifted detector geometry: Quantitative analysis of feasibility for clinical translation** *JOURNAL OF X-RAY SCIENCE AND TECHNOLOGY*
Vedantham, S., Tseng, H., Konate, S., Shi, L., Karellasa, A.
2020; 28 (3): 405–26
- **Reconstruction of x-ray focal spot distribution using a rotating edge.** *SPIE Medical Imaging 2020: Physics of Medical Imaging*
Shi, L., Bennett, N. R., Wang, A. S.
2020
- **Projection-domain metal artifact correction using a dual layer detector.** *SPIE Medical Imaging 2020: Physics of Medical Imaging*
Shi, L., Bennett, N. R., Star-Lack, J., Lu, M., Wang, A. S.
2020
- **Comparative study of dual energy cone-beam CT using a dual-layer detector and kVp switching for material decomposition.** *SPIE Medical Imaging 2020: Physics of Medical Imaging*
Shi, L., Bennett, N. R., Shapiro, E., Colbeth, R. E., Star-Lack, J., Lu, M., Wang, A. S.
2020
- **Toward quantitative short-scan cone beam CT using shift-invariant filtered-backprojection with equal weighting and image domain shading correction.** *Proceedings of SPIE--the International Society for Optical Engineering*
Shi, L., Zhu, L., Wang, A.
2019; 11072
- **Fast shading correction for cone-beam CT via partitioned tissue classification** *PHYSICS IN MEDICINE AND BIOLOGY*
Shi, L., Wang, A., Wei, J., Zhu, L.
2019; 64 (6)
- **Fast shading correction for cone-beam CT via partitioned tissue classification.** *Physics in medicine and biology*
Shi, L., Wang, A. S., Wei, J., Zhu, L.
2019
- **Breast dispersion imaging using undersampled rapid dynamic contrast-enhanced MRI**
Shi, L., Srinivasan, S., Hargreaves, B., Daniel, B.
edited by Mori, K., Hahn, H. K.
SPIE-INT SOC OPTICAL ENGINEERING.2019
- **Toward quantitative short-scan cone beam CT using shift-invariant filtered-backprojection with equal weighting and image domain shading correction**
Shi, L., Zhu, L., Wang, A.
edited by Matej, S., Metzler, S. D.
SPIE-INT SOC OPTICAL ENGINEERING.2019
- **Fast Intensity Non-Uniformity Correction for MR Images Using Sparse Samples**
Shi, L., Perkins, S., Moran, C., Hargreaves, B., Daniel, B.
WILEY.2018: E360
- **Fast Shading Correction of Cone Beam CT in Radiation Therapy Via Tissue Sparsity**
Shi, L., Zhu, L., Wei, J.
WILEY.2018: E403–E404
- **Internal Breast Tumor Heterogeneity On T2-Weighted Imaging: Double Echo Steady State(DESS) Versus 3D Fast Spin Echo (CUBE)**

-
- Shi, L., Alley, M., Hargreaves, B., Daniel, B., Moran, C.
WILEY.2018: E192
- **The Effect of Off-Focus Radiation in Scatter Correction for Cone Beam CT**
Shi, L., Zhu, L.
WILEY.2018: E459
 - **The role of off-focus radiation in scatter correction for dedicated cone beam breast CT** *MEDICAL PHYSICS*
Shi, L., Vedantham, S., Karellas, A., Zhu, L.
2018; 45 (1): 191–201
 - **X-ray scatter correction for dedicated cone beam breast CT using a forward-projection model** *MEDICAL PHYSICS*
Shi, L., Vedantham, S., Karellas, A., Zhu, L.
2017; 44 (6): 2312–20
 - **Shading Correction for Cone Beam CT in Radiation Therapy Via Sparse Sampling On Planning CT**
Shi, L., Tsui, T., Wei, J., Zhu, L.
WILEY.2017: 3012
 - **Fast shading correction for cone beam CT in radiation therapy via sparse sampling on planning CT** *MEDICAL PHYSICS*
Shi, L., Tsui, T., Wei, J., Zhu, L.
2017; 44 (5): 1796–1808
 - **Scintillator performance considerations for dedicated breast computed tomography**
Vedantham, S., Shi, L., Karellas, A.
edited by Grim, G. P., Furenlid, L. R., Barber, H. B.
SPIE-INT SOC OPTICAL ENGINEERING.2017
 - **Effects of breast density and compression on normal breast tissue hemodynamics through breast tomosynthesis guided near-infrared spectral tomography** *JOURNAL OF BIOMEDICAL OPTICS*
Michaelsen, K. E., Krishnaswamy, V., Shi, L., Vedantham, S., Karellas, A., Pogue, B. W., Paulsen, K. D., Poplack, S. P.
2016; 21 (9): 91316
 - **Library based x-ray scatter correction for dedicated cone beam breast CT** *MEDICAL PHYSICS*
Shi, L., Vedantham, S., Karellas, A., Zhu, L.
2016; 43 (8): 4529–44
 - **Library-Based X-Ray Scatter Correction for Dedicated Cone-Beam Breast CT: Clinical Validation**
Shi, L., Vedantham, S., Karellas, A., Zhu, L.
WILEY.2016: 3819
 - **Task-Specific Optimization of Scintillator Thickness for CMOS-Detector Based Cone-Beam Breast CT**
Vedantham, S., Shrestha, S., Shi, L., Vijayaraghavan, G., Karellas, A.
WILEY.2016: 3346
 - **Scatter Correction for Dedicated Cone Beam Breast CT Based On a Forward Projection Model**
Shi, L., Vedantham, S., Karellas, A., Zhu, L.
WILEY.2016: 3820
 - **Photon-counting hexagonal pixel array CdTe detector: Spatial resolution characteristics for image-guided interventional applications** *MEDICAL PHYSICS*
Vedantham, S., Shrestha, S., Karellas, A., Shi, L., Gounis, M. J., Bellazzini, R., Spandre, G., Brez, A., Minuti, M.
2016; 43 (5): 2118–30
 - **Library-based scatter correction for dedicated cone beam breast CT: a feasibility study**
Shi, L., Vedantham, S., Karellas, A., Zhu, L.
edited by Kontos, D., Flohr, T. G., Lo, J. Y.
SPIE-INT SOC OPTICAL ENGINEERING.2016
 - **Calibration and optimization of 3D digital breast tomosynthesis guided near infrared spectral tomography** *BIOMEDICAL OPTICS EXPRESS*
Michaelsen, K. E., Krishnaswamy, V., Shi, L., Vedantham, S., Poplack, S. P., Karellas, A., Pogue, B. W., Paulsen, K. D.

2015; 6 (12): 4981–91

- **Accuracy of Radiologists Interpretation of Mammographic Breast Density**
Vedantham, S., Shi, L., Karellas, A., O'Connell, A.
AMER ASSOC PHYSICISTS MEDICINE AMER INST PHYSICS.2015: 3574–75
- **Dedicated Cone-Beam Breast CT: Design of a 3-D Beam-Shaping Filter**
Vedantham, S., Shi, L., Karellas, A.
AMER ASSOC PHYSICISTS MEDICINE AMER INST PHYSICS.2015: 3612
- **Dedicated Cone-Beam Breast CT with Laterally-Shifted Detector: Monte Carlo Evaluation of X-Ray Scatter Distribution and Scatter-To-Primary Ratio**
Shi, L., Vedantham, S., Karellas, A.
AMER ASSOC PHYSICISTS MEDICINE AMER INST PHYSICS.2015: 3682
- **Large-angle x-ray scatter in Talbot-Lau interferometry for breast imaging** *PHYSICS IN MEDICINE AND BIOLOGY*
Vedantham, S., Shi, L., Karellas, A.
2014; 59 (21): 6387–6400
- **Dedicated Breast CT: Feasibility for Monitoring Neoadjuvant Chemotherapy Treatment** *JOURNAL OF CLINICAL IMAGING SCIENCE*
Vedantham, S., O'Connell, A. M., Shi, L., Karellas, A., Huston, A. J., Skinner, K. A.
2014; 4: 64
- **Volumetric Breast Density: Comparison of Estimates From Tomosynthesis Reconstructions with Mammography**
Shi, L., Vedantham, S., Michaelsen, K., Krishnaswamy, V., Shenoy, A., Pogue, B., Karellas, A., Paulsen, K.
WILEY.2014
- **Personalized estimates of radiation dose from dedicated breast CT in a diagnostic population and comparison with diagnostic mammography** *PHYSICS IN MEDICINE AND BIOLOGY*
Vedantham, S., Shi, L., Karellas, A., O'Connell, A. M., Conover, D. L.
2013; 58 (22): 7921–36
- **X-Ray Scatter in Differential Phase-Contrast Breast Imaging Using Gratings-Based Interferometer**
Vedantham, S., Shi, L., Karellas, A.
AMER ASSOC PHYSICISTS MEDICINE AMER INST PHYSICS.2013
- **Radiation Dose Reduction and Image Quality Evaluation of Coronal Truncated Projections in Cone-Beam Dedicated Breast CT**
Konate, S., Vedantham, S., Shi, L., Karellas, A.
AMER ASSOC PHYSICISTS MEDICINE AMER INST PHYSICS.2013
- **Technical Note: Skin thickness measurements using high-resolution flat-panel cone-beam dedicated breast CT** *MEDICAL PHYSICS*
Shi, L., Vedantham, S., Karellas, A., O'Connell, A. M.
2013; 40 (3): 031913
- **Scaling-law for the energy dependence of anatomic power spectrum in dedicated breast CT** *MEDICAL PHYSICS*
Vedantham, S., Shi, L., Glick, S. J., Karellas, A.
2013; 40 (1): 011901
- **Dedicated breast CT: Fibroglandular volume measurements in a diagnostic population** *MEDICAL PHYSICS*
Vedantham, S., Shi, L., Karellas, A., O'Connell, A. M.
2012; 39 (12): 7317–28
- **Dedicated breast CT: radiation dose for circle-plus-line trajectory** *MEDICAL PHYSICS*
Vedantham, S., Shi, L., Karellas, A., Noo, F.
2012; 39 (3): 1530–41
- **Cone-Beam Artifacts in Dedicated Breast CT**
Vedantham, S., Shi, L., Noo, F., Glick, S., Karellas, A.
WILEY.2011
- **Semi-automated Segmentation and Classification of Digital Breast Tomosynthesis Reconstructed Images**

Vedantham, S., Shi, L., Karellas, A., Michaelsen, K. E., Krishnaswamy, V., Pogue, B. W., Paulsen, K. D., IEEE
IEEE.2011: 6188–91