Luzhen Deng

Data of Birth: Aug. 09, 1991, **Citizenship:** Shanghai, China
Phone: +86 15800330717, **E-mail:** dlz@alu.cqu.edu.cn
Research Interests: Medical Imaging, X-ray CT and MRI reconstruction

Education

- **Ph.D., Optical Engineering, Chongqing University, China** 09/2015-06/2019
  Dissertation: Research of Key Technologies for Multi-modality X-ray Fluorescence Computed Tomography (XFCT) Based on an X-ray Tube Source.
- **Visiting Ph.D., Radiation Physics, The University of Texas MD Anderson Cancer Center, USA** 10/2016-10/2018
- **M.A., Optical Engineering, Chongqing University, China** 09/2013-06/2015
  Thesis: Study on Optimized Reconstruction Algorithm of X-ray Computed Tomography (CT) with Sparse Projection.
- **B.A., Measurement Technology & Instrumentation, Chongqing University, China** 09/2009-06/2013

Work Experience

- **Part Time Teacher, Chongqing University of Technology** 08/2022-present
  - Tutoring undergraduates
- **Algorithm Engineer, Shanghai Neusoft Medical Co., Ltd.** 09/2021-present
  - Developing MRI Non-Cartesian reconstruction (radial and rokar), parallel reconstruction (sense and grappa), Partial fourier reconstruction, uniformity correction, coil compression, spike noise correction; building a CUDA-based reconstruction platform for the recontruction team.
- **Algorithm Engineer, Shanghai UEG Medical Imaging Equipment Co., Ltd.** 07/2019-07/2021
  - Developing dual-energy dental CBCT and mobile C-arm CBCT: 3D reconstruction (FDK and iterative reconstruction), CT related corrections (geometry calibration, metal artifact reduction, scatter correction, lag correction, etc.), image processing (image enhancement, image denoising, etc.), GPU acceleration.

Publications

Journal papers

1. Bingqiang Ye#, **Luzhen Deng#***, Shanghai Jiang, Sijun Cao, Ruge Zhao, Peng Feng*. Feasibility Simulation of 3D Benchtop Multi-Pinhole X-ray Fluorescence Computed Tomography with Two Novel Geometries. Photonics 2023, 10, 399.
2. Hem Moktan , Md Foiez Ahmed , Sandun Jayarathna, **Luzhen Deng** and Sang Hyun Cho*. Monte Carlo study of x-ray detection configurations for benchtop x-ray fluorescence computed tomography of gold nanoparticle-loaded objects, Physics in Medicine & Biology, 2020.
3. Jing Guo, Peng Feng, **Luzhen Deng**, Yan Luo, Peng He, Biao Wei, Optimization of Detection Angle for Pinhole X-Ray Fluorescence Computed Tomography, Acta Optica Sinica, 2020.
4. **Luzhen Deng**, Md F Ahmed, Sandun Jayarathna, Peng Feng, Biao Wei, Sang Hyun Cho*. A detector's eye view (DEV)-based OSEM algorithm for benchtop x-ray fluorescence computed tomography (XFCT) image reconstruction. Physics in Medicine & Biology, 2019.
5. **Luzhen Deng**, Selcuk Yasar, Md F Ahmed, Sandun Jayarathna, Peng Feng, Biao Wei, Srinivasanc Vedantham, Andrewc Karellas, Sang Hyun Cho*. Investigation of transmission computed tomography (CT) image quality and x-ray dose achievable from an experimental dual-mode benchtop x-ray fluorescence CT and transmission CT system. Journal of X-Ray Science and Technology, 2019.
6. **Luzhen Deng**, Biao Wei, Peng He, Yi Zhang, Peng Feng*. A Geant4-based Monte Carlo study of a

benchtop multi-pinhole x-ray fluorescence computed tomography imaging. International Journal of Nanomedicine, 2018.

7. **Luzhen Deng**, Peng He*, Shanghai Jiang, Mianyi Chen, Biao Wei, Peng Feng*. A hybrid reconstruction algorithm for computed tomography based on diagonal total variation. Nuclear Science and Techniques, 29(3), 2018.
8. **Luzhen Deng**, Peng Feng*, Mianyi Chen, Peng He, Biao Wei*. An improved total variation minimization method using prior images and split-bregman method in CT reconstruction. BioMed Research International, 2016.
9. **Luzhen Deng**, Deling Mi*, Peng He, Peng Feng, Pengwei Yu, Mianyi Chen, Zhichao Li, Jian Wang*, Biao Wei. A CT Reconstruction Approach from Sparse Projection with Adaptive-weighted Diagonal Total-Variation in Biomedical Application. Bio-Medical Materials and Engineering, 2015, 26, S1685–S1693.
10. **Luzhen Deng**, Peng Feng*, Mianyi Chen, Peng He, Wei Zhang, Jian Wang, Zhichao Li, Biao. A CT Reconstruction algorithm based on Contourlet transform and split Bregman method. CT Theory and Applications, 2015, 23(5): 751-759. (in Chinese)
11. **Luzhen Deng**, Peng Feng*, Mianyi Chen, Peng He*, Quangsang Vo, and Biao Wei. A CT Reconstruction Algorithm Based on Non-aliasing Contourlet Transform and Compressive Sensing. Computational and Mathematical Methods in Medicine, 2014.

Conference Papers

12. Md Foiez Ahmed, **Luzhen Deng**, Sandun Jayarathna, Sang Hyun Cho*. Effect of Incident X-Ray Spectrum On CT Image Quality During Small Animal Imaging with An Experimental Dual Mode Benchtop CT/x-Ray Fluorescence CT (XFCT) System. American Association of Physicists Medicine, San Antonio, TX, USA, July 2019.
13. Md Foiez Ahmed, **Luzhen Deng**, Sandun Jayarathna, Sang Hyun Cho*. Investigation of X-Ray Detection Configurations for X-Ray Fluorescence Computed Tomography (XFCT) Imaging of Gold Nanoparticle-Loaded Small Animal-Sized Phantoms: A Monte Carlo Study. American Association of Physicists Medicine, San Antonio, TX, USA, July 2019.
14. **Luzhen Deng**, Selcuk Yasar, Md F Ahmed, Sandun Jayarathna, Sang Hyun Cho*. Investigation of CT image quality achievable from an experimental dual mode benchtop X-Ray fluorescence CT (XFCT) and Micro-CT (μCT) system. American Association of Physicists Medicine, Nashville, TN, USA, July 2018. (**Scientific Highlights, 10 minutes Oral Presentation**)
15. **Luzhen Deng**, Peng Feng, Mianyi Chen, Peng He, Biao Wei. A CT Reconstruction algorithm based on Diagonal Total Variation. The 5th High Educational Improvement Conference on Nondestructive Testing, Chongqing, China, November 2014. (**Outstanding Paper, 15 minutes Oral Presentation**)
16. **Luzhen Deng**, Peng Feng, Mianyi Chen, Peng He, Biao Wei. A CT Reconstruction algorithm based on Contourlet transform and split Bregman method. 2014 National X-ray Digital Radiography and New CT Technology Conference, Xiamen, China, May 2014.

Honors & Awards (Selected)

Honors

- Outstanding Employee in Shanghai Neusoft Medical Co., Ltd. 11/2023
- MRI R&D SPOT AWARD in Shanghai Neusoft Medical Co., Ltd. 11/2022
- Outstanding Graduate Student in Chongqing University 11/2014

Scholarship

- Scholarship from China Scholarship Council – 2 years 10/2016-10/2018
- Tang Lixin Scholarship – 3 years 10/2016-7/2019
- Doctoral Scholarship for Freshman in Chongqing University 09/2015
- National Scholarship for Graduate Students in Chongqing University 12/2014
- Chongqing University Scholarship, level A – 2 years 09/2013-06/2015

Grants

- Graduate Innovative Research Projects of Chongqing, No. CYB16044. (**Leading**) 06/2016-06/2018
- US National Institutes of Health R01EB020658. (Participated) 10/2016-10/2018

Skills

- **Programming**: Matlab, C++, CUDA, Geant4 Monte Carlo
- **Foreign Language**: IELTS 6.5 (taken August 8, 2015), Toastmaster Competent Communicator recognition (received September 20, 2018)

References

- Prof. Biao Wei, Ph.D., Chongqing University, #174 Shazhengjie, Chongqing, China, Phone: +86 13638330906, Email: weibiao@cqu.edu.cn
- Prof. Sang Hyun Cho, Ph.D., The University of Texas MD Anderson Cancer Center, Unit 094, 1515 Holcombe Blvd, Houston, TX, USA, Phone: +1 7137925864, Email: scho@mdanderson.org
- Prof. Peng Feng, Ph.D., Chongqing University, #174 Shazhengjie, Chongqing, China, Phone: +86 13996280738, Email: coe-fp@cqu.edu.cn