MORAN XU

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Education

Washington University in St. Louis, St. Louis, MO 2021 - 2023

– MS in Computer Science and Engineering (GPA: 4.0/4.0)

Work Experience

Carl Zeiss X-Ray Microscopy, Inc., Dublin, CA

– Algorithm Engineer at Advanced Design & Development team 2023 - Present

(i) Designed, developed and optimized various self-supervised Image/video Super-resolution, and Denoising algorithms for empowering software products for top companies in biomedical / semiconductor industries, creating millions of annual revenues.

(ii) Designed and developed fully-3d, diffusion-based deep foundation models for high-quality X-ray reconstruction.

(iii) Led the development and productizing an Azure cloud-based VM alignment and computing agent.

(iv) Developed LLM-empowered agent to assist Azure VM operations.

(v) Led the development of an automated imaging characterization tool for integrated testing of X-ray reconstruction algorithms.

Research Experience

Washington University in St. Louis, St. Louis, MO

– Research Assistant 2021 - 2022

(i) Designed a deep autoencoder solution for rateless information transmission and reconstruction.

(ii) Applied Distillation training strategies for finetuning detection / classification predictions.

(iii) Developed a tuning-free reinforcement learning strategy to automatically search the value of hyper-parameters in image reconstruction process, and to decide the termination iterative process.

Southeast University, China

– Research Assistant 2017 - 2020

(i) Developed a generative (WGAN-gp), progressive strategy for image restoration problems. Image restoration problems include denoising, super resolution and deblurring.

(ii) Developed iterative solution combined with sparse representation (dictionary) for missing-data image reconstruction.

(iii) Developed fully-3d solutions for multi-energy computed tomography (MCT) reconstruction

Publications

1. Bukka, V.V.R., **Xu, M**., Andrew, M. and Andreyev, A., 2025. Assessment of deep-learning-based resolution recovery algorithm relative to imaging system resolution and feature size. *Methods in Microscopy*, (0). Link
2. Andrew, M., Andreyev, A., Yang, F., **Xu, M**. and Xu, S., 2024, October. X-ray reconstruction using synthetic prior image restoration, with application to noise and artefact removal. In *Developments in X-Ray Tomography XV* (Vol. 13152, p. 131520E). SPIE. Link
3. Xu, S., Candell, S., Case, T., Goehnermeier, A., Irwin, J., Majlan, K., Preil, M., Ruoff, J., **Xu, M**., Yang, F. and Andrew, M., 2024, October. Self-supervised deep image restoration for x-ray computed laminographic tomography. In *Developments in X-Ray Tomography XV* (Vol. 13152, p. 131520T). SPIE. Link
4. Wang, R., Liu, H., Qiu, J., **Xu, M**., Guérin, R. and Lu, C., 2023, December. Progressive neural compression for adaptive image offloading under timing constraints. In *2023 IEEE Real-Time Systems Symposium (RTSS)* (pp. 118-130). IEEE. Link
5. **Xu, M**., Hu, D., Luo, F., Liu, F., Wang, S. and Wu, W., 2020. Limited-angle X-ray CT reconstruction using image gradient ℓ_0-norm with dictionary learning. *IEEE Transactions on Radiation and Plasma Medical Sciences*, *5*(1), pp.78-87. Link
6. Hu, D., Wu, W., **Xu, M**., Zhang, Y., Liu, J., Ge, R., Chen, Y., Luo, L. and Coatrieux, G., 2019. SISTER: Spectral-image similarity-based tensor with enhanced-sparsity reconstruction for sparse-view multi-energy CT. *IEEE Transactions on Computational Imaging*, *6*, pp.477-490. Link
7. **Xu, M**., Hu, D. and Wu, W., 2019, September. ℓ0DL: Joint Image Gradient ℓ0-norm with Dictionary Learning for Limited-angle CT. In *Proceedings of the 10th ACM International Conference on Bioinformatics, Computational Biology and Health Informatics (pp. 538-538)*. Link

Selected Awards and Honors

- Dean's Select Fellowship, School of McKelvey Engineering, Washington University in St. Louis 2022
- Education Foundation Scholarship, China 2020

Technical Skills

Computer and Language Skills

- Programming: Fluent in Python (Pytorch, Tensorflow, OpenCV, etc.), Matlab. Comfortable with C / C++.
- Cloud: Familiar with Azure. Comfortable with AWS.
- Tools: Experienced with Visual Studio Code, PyCharm, Azure DevOps CI/CD, Git, ImageJ, Microsoft Visual Studio, Spyder, etc.

Supervised Students

– Aman Garg: previous summer intern at Carl Zeiss X-ray Microscopy, Inc.; currently pursuing a master's degree of computational science and Engineering at Georgia Institute of Technology.