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 Experiences

Carl Zeiss X-Ray Microscopy, Inc., Dublin, CA 2023 - Present
Senior Algorithm Engineer at Advanced Design & Development team

- Advanced Imaging Algorithm Research & Development
  - Drove millions in annual revenue through algorithm solutions for biomedical and semiconductor industry clients
  - Developed and built **C/C++ projects** for fast model inference and deployment.
  - Designed and developed fully-3D, **diffusion**-based vision foundation models for high-quality X-ray reconstruction and super-resolution enhancement.
  - Created "2.5D", hybrid **noise2noise**/**noise2clean** workflow for precise noise estimation and high-quality reconstruction
  - Designed and patenting "Throughput" mode technology, significantly reducing sampling time
  - Engineered "2.5D" image **registration** and **super-resolution** workflow enabling large FOV, high-resolution imaging
- Cloud Infrastructure Innovation
  - Led development of Azure cloud-based VM alignment and computing infrastructure, replacing **$100K+** workstations with affordable subscription model
  - Designed and deployed Azure web services for **automatic** VM deployment and **multi-threaded** control
  - Created novel VM architecture for **dynamic** resource alignment
  - Engineered high-speed cloud reaction VM **containerization**
- Testing & Implementation
  - Led development of automated imaging characterization tool for integrated testing of X-ray reconstruction algorithms
  - Implemented automated report generation and binary results storage for streamlined reporting

Research Experiences

Washington University in St. Louis, St. Louis, MO 2021 - 2022
Research Assistant

- Designed a deep **autoencoder** solution for rateless information transmission and reconstruction.
- Applied **Knowledge Distillation** training strategies for finetuning **detection / classification** predictions.
- 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 2017 - 2020
Research Assistant

- Developed a generative (WGAN-gp), progressive strategy for image restoration problems. Image restoration problems include denoising, super resolution and deblurring.
- Developed iterative solution combined with sparse representation (dictionary) for missing-data image reconstruction.
- Developed fully-3d solutions for multi-energy computed tomography (MCT) reconstruction

Selected 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. 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
3. **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

(Full list here: Moran Xu - Google Scholar)

Technical Skills

Computer and Language Skills

- Programming: Fluent in Python (Pytorch, Tensorflow, OpenCV, etc.), Matlab. Comfortable with C / C++, HTML.
- 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.

Coaching Experiences

- Aman Garg: previous cloud computing 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.