

## EDUCATION

---

- **Massachusetts Institute of Technology** Cambridge, MA  
*PhD, Electrical Engineering and Computer Science* Sep 2018 – May 2023
- **Massachusetts Institute of Technology** Cambridge, MA  
*MS, Electrical Engineering and Computer Science* Sep 2018 – May 2020
- **Tsinghua University** Beijing, China  
*BSc, Engineering Physics* Aug 2014 – Jul 2018

## EXPERIENCE

---

- **Meta** New York, NY  
*Machine Learning Engineer Internship, Instagram Reels Core Ranking* May 2022 - Aug 2022
  - **Mitigate Short Video Bias in Reels:** Designed and developed new signals to mitigate short video bias in Reels ecosystem. Trained and deployed deep learning ranking models with new signals. Performed A/B tests to evaluate the new models. The proposed signals mitigated the short video bias (+20% long video play), increased user time spent (+0.5%) and achieved gains in user sessions (+0.1%)
- **Google** New York, NY  
*Software Engineer Internship, Adwords Insights Team* Jun 2021 - Aug 2021
  - **Negative Trends Mitigation:** Mitigated negative reports of insight trends with a new keyword classification method in search ads.
  - **Cold Start Detection:** Proposed and Implemented a novel algorithm to detect the cold start periods of machine learning based bidding strategies in Adwords.
- **Massachusetts Institute of Technology** Cambridge, MA  
*Research Assistant* Sep 2018 - May 2023
  - **2D-to-3D Reconstruction:** Proposed a robust and efficient method for reconstructing/rendering a 3D volume from multiple motion-corrected 2D slices using Transformers and Implicit Neural Representations.
  - **Image Quality Assessment (IQA):** Developed a semi-supervised learning method for IQA and built a real-time IQA system on a MR scanner.
  - **3D Pose Estimation Pipeline:** Developed a automatic pipeline for 3D fetal MRI data processing, including image super-resolution, keypoint detection (pose estimation), and motion analysis.
- **United Imaging Intelligence America** Cambridge, MA  
*Research Scientist Internship* Jun 2020 - Aug 2020
  - **Multi-modal Registration:** Developed a deep learning based multi-modal registration framework with multi-modal GAN and neural ODE.
  - **Digitally Reconstructed Radiograph:** Implemented a differentiable DRR rendering operator on GPU with CUDA C++. Developed a 2D/3D registration method for DRR and CT with deep learning.
- **United Imaging Healthcare** Shanghai, China  
*Research Scientist Internship* Mar 2018 - Jun 2018
  - **Diffusion Image Enhancement:** Improve the quality of single-shot diffusion weighted images (super-resolution and denoising) using generative adversarial network.

## OTHER PROJECTS

---

- **Citadel Data Open Boston 2019:** Third place
- **VQA:** Visual Question Answering using top-down and bottom-up attention models
- **MRI-Recon:** A Matlab toolbox for solving convex optimization in MR reconstruction with automatic differentiation

## SKILLS

---

- **Programming Languages:** Python, Matlab
- **Knowledge:** Machine Learning, Deep Learning, Computer Vision, Recommendation System, Statistics, Optimization

- MIT EECS Nathaniel Durlach Fellowship
- Boeing Scholarship

PUBLICATIONS

---

- [1] **Xu, J.**, Moyer, D., Grant, P. E., Golland., P., Iglesia, J. E., Adalsteinsson, E. SVoRT: Iterative Transformer for Slice-to-Volume Registration in Fetal Brain MRI. MICCAI 2022 (oral presentation).
- [2] Gagoski, G., **Xu, J.**, Wighton, P., Tisdall, D., Frost, R., Lo, W., et al. Automated detection and reacquisition of motiondegraded images in fetal HASTE imaging at 3T. MRM (2022)
- [3] **Xu, J.**, Turk, E. A., Grant, P. E., Golland., P., Adalsteinsson, E. STRESS: Super-Resolution for Dynamic Fetal MRI using Self-Supervised Learning. MICCAI 2021.
- [4] **Xu, J.**, Adalsteinsson, E. Deformed2Self: Self-Supervised Denoising for Dynamic Medical Imaging. MICCAI 2021.
- [5] **Xu, J.**, Chen, E.Z., Chen, X., Chen, T. and Sun, S. Multi-scale Neural ODEs for 3D Medical Image Registration. MICCAI 2021.
- [6] **Xu, J.**, Lala, S., Gagoski, B., Turk, E. A., Grant, P. E., Golland., P., Adalsteinsson, E. Semi-Supervised Learning for Fetal Brain MRI Quality Assessment with ROI consistency. MICCAI 2020.
- [7] Zhang, M., **Xu, J.**, Turk, E. A., Grant, P. E., Golland., P., Adalsteinsson, E. Enhanced Detection of Fetal Pose in 3D MRI by Deep Reinforcement Learning with Physical Structure Priors on Anatomy. MICCAI 2020.
- [8] **Xu, J.**, Zhang, M., Turk, E. A., Grant, P. E., Golland., P., Adalsteinsson, E. 3D Fetal Pose Estimation with AdaptiveVariance and Conditional GenerativeAdversarial Network. MICCAI PIPPI 2020.
- [9] **Xu, J.**, Gong, E., Ouyang, J., Pauly, J., Zaharchuk, G. Ultra-low-dose 18F-FDG brain PET/MR denoising using deep learning and multi-contrast information. SPIE Medical Imaging (2020) (oral presentation)
- [10] **Xu, J.**, Zhang, M., Turk, E. A., Zhang, L., Grant, P. E., Ying, K., et al. Fetal Pose Estimation in Volumetric MRI Using a 3D Convolution Neural Network. MICCAI 2019.
- [11] Jiang, M., Zhang, Y., **Xu, J.**, Ji, M., Guo, Y., Guo, Y., et al. Assessing EGFR gene mutation status in non-small cell lung cancer with imaging features from PET/CT. Nuclear medicine communications (2019)
- [12] Chen, K., Gong, E., Macruz, F., **Xu, J.**, Boumis, A., Khalighi, M., et al. Ultra-low-dose 18F-florbetaben Amyloid PET Imaging using Deep Learning with Multi-contrast MRI Inputs. Radiology (2018).
- [13] **Xu, J.**, Gong, E., Pauly, J., & Zaharchuk, G. 200x Low-dose PET reconstruction using deep learning. arXiv preprint arXiv:1712.04119.