Xingyu Liu

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EDUCATION

Harvard University Expected May 2022
Master of Science in Data Science
- **Courses**: Artificial Intelligence (MIT), Computer Graphics (MIT), Data Science, Computational System Development

Shanghai Jiao Tong University (SJTU) June 2020
Bachelor of Engineering in Biomedical Engineering (Image Processing Track)
- **Overall GPA**: 88/100 (TOP 10%)
- **Relevant Courses**: Machine Learning, Probability and Statistics, Algorithm and Data Structure, Biomedical Image Processing, Computer System Architecture, Electronics System Design Based on Android, C++ Programming

WORK EXPERIENCE

Recommendation Algorithm Intern| TikTok Dec 2020 – Apr 2021
Team: TikTok Recommendation Group, Shanghai, China
- Works on recommendation algorithms for short videos

Machine Learning Engineer Intern| Tencent July 2020 – Oct 2020
Team: Content Mining Group, Data R&D Center, Shenzhen, China
- Used lightGBM to classify low-grade social accounts based on their posts, achieved 89% precision, 80% recall.
- Deployed shot detection and calculated optical flow from videos to classify shaky videos, improved 20% precision.
- Implemented Kernelized Correlation Filter tracking with RetinaFace for face detection and tracking.

Computer Vision Software Intern| Intel Dec 2019 – Jan 2020
Team: Intel Internet of Things Group, Shanghai, China
- Wrote research surveys about approximate nearest neighbor search algorithms and built a demo based on FAISS

PUBLICATION

- **MitoEM Dataset: Large-scale 3D Mitochondria Instance Segmentation from EM Images.**
- *Donglai Wei, Zudi Lin, Daniel Franco, Nils Wendt,* ***Xingyu Liu****, Wenjie Yin, Xin Huang, Aarush Gupta, Won-Dong Jang, Xueying Wang, Ignacio Arganda, Jeff Lichtman, Hanspeter Pfister.*
- Accepted by Medical Image Computing and Computer Assisted Intervention (MICCAI), 2020.

RESEARCH EXPERIENCE

3D Mitochondria Segmentation | Harvard University | Research Assistant July 2019 – Oct 2019
Advisor: Hanspeter Pfister, An Wang Professor of Computer Science, ACM Fellow
- Used 3D Lightweight U-Net to attain initial segmentation of the mitochondria in mammalian brain tissue electron microscopy images (>1 TB).
- Applied Connected Component labeling to filter out spurious detection and employed marker-controlled Watershed algorithm to improve boundary accuracy.
- Applied online hard negative mining, embedding, and discriminative loss to reduce false positive rate to 2%.
- One Paper accepted by top-tier medical image conference MICCAI2020 and submitted one paper to CVPR2021

Radiomics Image Computing Platform Design | SJTU | Research Assistant April 2018 – July 2018
Advisor: Qian Wang, Professor at School of Biomedical Engineering
- Used PyQt5 to construct a software which can visualize and compute 3D medical images.
- Visualization module include medical image visualization, annotation and patients' information visualization.
- Computation module include image feature extraction (based on PyRadiomics and CUDA), image feature analysis (t-test, logistic regression, support vector machine, etc.) and image processing (smoothing, denoise, etc.)

HONORS & AWARDS

- Finalist Winner in 2019 American Mathematical Contest in Modeling (top 0.31%) 2019
- National Second Prize at 2018 Contemporary Undergraduate Mathematical Contest in Modeling (top 4%) 2018

SKILLS

Programming: Python (PyTorch, TensorFlow, Pandas, PyQt, Scrapy), C/C++, Verilog, MATLAB, Assembly, R, SQL
Software/Applications: LaTeX, Keil, Proteus, Arduino, Xilinx, Origin, LabVIEW