

# Xingyu Liu

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## EDUCATION

### Harvard University

Expected May 2022

*Master of Science in Data Science*

- **Relevant Courses:** Artificial Intelligence, System Design for Computational Science, Computer Graphics

### Shanghai Jiao Tong University (SJTU)

June 2020

*Bachelor of Engineering in Biomedical Engineering (Image Processing Track)*

- **Overall GPA:** 3.79/4 (TOP 10%)
- **Relevant Courses:** Machine Learning, Probability and Statistics, Algorithm and Data Structure, Biomedical Image Processing, Computer System Architecture, Intro to Data Science with Python, C++ Programming

## WORK EXPERIENCE

### Machine Learning Engineer Intern | Tencent

July 2020 – Oct 2020

*Team: Content Mining Group, Data R&D Center, Shenzhen, China*

- Classified low-grade users based their posts data, used lightGBM and achieved precision of 89%, recall of 80%.
- Deployed shot detection and calculated sparse optical flow from videos to classify shaky videos, improved 20% precision.
- Implemented KCF 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 two research surveys about approximate nearest neighbor search algorithms.
- 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*

- 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 MICCAI 2020

[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

**Languages:** Chinese (Native), English