

# **Education**

#### **School of Life Science, Tsinghua University**

Beijing, China

BSC IN LIFE SCIENCE Sept. 2014 - June. 2019

- Minor in Statistics
- XueTang program, cultivating top students to become leading researchers in science
- Courses Taken: Calculus, Linear Algebra, Probability and Statistics, Mathematical Modelling, Biostatistics, Bioinformatics, Pattern Recognition, Artificial Neural Networks.

#### Tandon School of Engineering, New York University

Brooklyn, New York

Ph.D. Student in Electrical Engineering

Sept. 2019 -

- Video Lab, Supervisor: Prof. Yao Wang
- Courses Taken: Probability and Stochastics, Digital Signal Processing, Image and Video Processing, Advanced Machine Learning, System Optimization, Medical Imaging

# Publications \_\_\_\_\_

2020	Stimulus Speech Decoding From Human Cortex With Generative Adversarial Network Transfer	Published
2020	Learning, IEEE International Symposium on Biomedical Imaging (ISBI 2020)	rublished
	Two-Stream Active Query Suggestion for Large-Scale Object Detection in Connectomics, Zudi	
2020	Lin, Donglai Wei, Won-Dong Jang, Siyan Zhou, Xupeng Chen, Jeff Lichtman, Hanspeter Pfister, 16th	Accepted
	European Conference on Computer Vision (ECCV 2020)	
2020	exSEEK: Robust exRNA Analysis Tool for Noninvasive Biomarker Discovery, Patent	Submitted

# Research Experience

#### Stimulus Speech Decoding from Human Cortex using ECoG signal

Video Lab, New York University

SUPERVISOR: YAO WANG 2019-

- Use wavenet vocoder for spectrogram to speech conversion
- Siamese auto-encoder for large corpus spectrogram encoding and decoding
- GAN based network pretraining for transfer learning

#### **DeepShape: Detection of Sequence and Structural Motif using Deep Learning**

Lu Lab, Tsinghua University

Supervisor: **Zhi Lu** 2017-2018

- Processed structure probing data for 1D and 2D deep learning model in structure prediction
- Used unsupervised deep learning model (VAE) and attention model for Motif detection and localization
- Used graph convolution neural networks to learn meaningful structural motifs

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#### exSeek: Robust exRNA Analysis Tool for Noninvasive Biomarker

Lu Lab, Tsinghua University

Supervisor: **Zhi Lu** 2017-2018

- Developed a complete pipeline for exRNA analysis. Included mapping, counts, matrix processing, robust feature selection and evaluation
- · Used statistical and machine learning model for imputation, normalization, batch removal and feature selection
- Packaged all functions into software. Validated on published and lab dataset

#### eMaize: Machine learning method for quantitative traits prediction

Lu Lab, Tsinghua University

SUPERVISOR: ZHI LU 2017-2018

- Developed a new linear mixed model to predict traits of 36,000 hybrid samples using SNP data to find heterosis in maize
- Developed a non-parameter model to solve small sample training problems

Visual Computing Group, Harvard

**Efficient Instance Annotation for Connectomics** 

University

SUPERVISOR: HANSPETER PFISTER

2018 Summer

- Constructed a powerful 3D U-net for synapse detection in CREMI dataset. Ranked 1<sup>st</sup> place in CREMI contest
- Constructed 3D U-net and 3D-CNN for synaptic connections between neurons, and intracellular structures like mitochondria. Construct an active-learning annotation framework for proofreading
- Applied models to predict JWR dataset with 1 million synapses. Submitted a paper to conference on Computer Vision and Pattern Recognition (CVPR)

#### Reconstruction of neural muscular junction connectomic EM data

Lichtman Lab, Harvard University

SUPERVISOR: JEFF LICHTMAN 2018 Summer

- Used 3D U-net and matching algorithm for neuron membrane prediction and tracing
- 3D reconstruction of 13 neural muscular juntions between neurons and muscles (largest ever)
- Quantified the linear correlation of axonal diameter and synaptic area by statistical analysis

### **Activities&Awards**

2018	<b>Teaching Assistant in Bioinformatics Basic Course</b> , Wrote three chapters of teaching gitbook	University	
2015-2018 <b>Scholarship</b> , XueTang scholarship			
2017	Second prize, The First National College Students' Brain Computation and Application Competition	International	
2017	First Prize, eMaize Challenge: Machine learning in breeding	National	
2018	Meritorious Winner, Mathematical Contest in Modeling (MCM)	International	
2016-2018 <b>Xuetang Research Funding</b> , \$10,000 for Research in Lu lab			
2016-2018 <b>Initiative Scientific Research Program</b> , \$8,000 for Research in Biomedical Image analysis University			
2015	Golden Prize, Social practice award for investigation on e-cycling	University	

## Skills

- Proficient in Python, MATLAB, R, Bash, ATEX
- Familiar with Machine Learning, Deep Learning (Tensorflow, Keras, Pytorch) and Computer Vision tools.
- Familiar with Linux, MacOS, Windows