Xupeng **Chen**

Electrical Engineering · New York University

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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 Learning**, IEEE International Symposium on Biomedical Imaging (ISBI 2020)	*Published*
2020	**Two-Stream Active Query Suggestion for Large-Scale Object Detection in Connectomics**, Zudi Lin, Donglai Wei, Won-Dong Jang, Siyan Zhou, Xupeng Chen, Jeff Lichtman, Hanspeter Pfister, 16th European Conference on Computer Vision (ECCV 2020)	*Accepted*
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

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

Efficient Instance Annotation for Connectomics *Visual Computing Group, Harvard University*

SUPERVISOR: **HANSPETER PFISTER** *2018 Summer*

- Constructed a powerful 3D U-net for synapse detection in CREMI dataset. Ranked 1^{st} 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	**Teaching Assistant in Bioinformatics Basic Course,** Wrote three chapters of teaching gitbook	*University*
2015-2018	**Scholarship,** XueTang scholarship	*University*
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	**Xuetang Research Funding,** $10,000 for Research in Lu lab	*University*
2016-2018	**Initiative Scientific Research Program,** $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, LaTeX
- Familiar with Machine Learning, Deep Learning (Tensorflow, Keras, Pytorch) and Computer Vision tools.
- Familiar with Linux, MacOS, Windows