

## Experience

- 01/20-present **PhD, Electrical Engineering**, *University of Washington*, Advisor: Eli Shlizerman.  
06/22-09/22 **Internship**, *Mineral Google X, the moonshot factory*.  
06/21-09/21 **Internship**, *Mineral Google X, the moonshot factory*.  
10/19-12/19 **Internship**, *Tencent AI Lab*.  
08/16-05/18 **Master, Electrical and Computer Engineering**, *Carnegie Mellon University*.  
11/15-04/16 **Visting Student, Biomedical Engineering**, *Tsinghua University*.  
09/12-05/16 **Bachelor, Biomedical Engineering**, *Huazhong University of Science and Technology*.

## Deep Learning Research and Project Experiences

- 06/21-09/21 **Domain Adaptation and Few Shots Learning for Object Detection**, *Internship at Google X*.
  - Improve the Domain Adaptation performance on object detection.
  - The proposed method can be quickly adapted to new domains with a few new domain examples.

06/21-09/21 **Performance Degradation Estimation for Object Detection**, *Internship at X*.
  - Proposed Confidence Margin (CM) as an uncertainty measure for object detection.
  - Improved the correctness of CM with image augmentations.
  - Leveraged CM to estimate model performance when no ground truth label was available.

01/20-present **Active Learning for Semi-supervised Action Recognition**, *PhD Research Project*.
  - Data: animal [4] and human skeleton datasets (e.g. NTU RGB+D, UCLA).
  - Novel Active Learning method, suitable for skeleton sequence data, was proposed to select action sequences for labeling. We achieve state of the art performance on skeleton based action recognition task with a few labeled samples [5].

08/17-12/17 **Primary Visual Cortex Modeling with Deep Neural Network**, *Master Project*.
  - Applied Convolutional Neural Network to fit V1 neural responses of the macaque monkey.
  - Improved prediction correlation from 0.599 to 0.63 by adding L1 norm, showing sparsity property of neuron responses.

01/18-05/18 **Alzheimer's Disease (AD) and Mild Cognition Impairment (MCI) Diagnosis**, *Master Project*.
  - Compared difference machining learning techniques in Alzheimer's disease detection based on volume and shape features of strcutal MRI image.
  - Proposed Shape-Embedding network which improved classification accuracy to 82.00% in the MCI vs HC classification.

08/17-12/17 **Deep Learning Projects**.
  - Implemented Stochastic Gradient Descent & Batch Normalization from scratch for FCN and RBM reaching the same performance as existing framework (Pytorch).
  - Sequence to Sequence prediction of 4-grams.

01/18-05/18 **Reinforcement Learning Projects**.
  - Implemented Deep Q Network (DQN) and Duling DQN on both CartPole-v0 and MountainCar-v0 environment.
  - Applied Actor-critic network with Hindsight Experience Replay for robotic arm control in simulated environment and improved the performance with Prioritized Experience Replay.

## Other Projects

- 08/17-05/19 **Neural Representation Space Transformation During Learning Process**.
  - Data: ECoG recordings from V2 of macaque monkey.
  - Analyzed neural representation changes based on t-Distributed Stochastic Neighbor Embedding, Principal Component Analysis and Sparsity Analysis.

08/17-12/17 **Discrimination Ability of V1 and V2 Neurons on Cartesian Stimuli (Macaque Monkey)**.
  - Applied Support Vector Machine decoding frequency and orientation of stimuli based on V1 and V2 neuron responses.

08/16-06/17 **Hierarchical Subcortical Sub-regional Shape Network Analysis**.
  - Computed global and local efficiency of subcortical brain networks using graph theory[2].

## Skills

Programming Python, MATLAB, C<sup>++</sup>, R.  
Software/Tools PyTorch, Keras, TensorFlow.

## Activity

Organizer Be in the administrative team of NeuroAI Journal Club *Maintain the platform for both male and female student to have equally and insightful discussion over current academic research.*

## Publications

- [1] Yujing Gong, Huijun Wu, Jingyuan Li, Nizhuan Wang, Hanjun Liu, and Xiaoying Tang. Multi-granularity whole-brain segmentation based functional network analysis using resting-state fmri. *Frontiers in neuroscience*, 12:942, 2018.
  - [2] Jingyuan Li, Yujing Gong, and Xiaoying Tang. Hierarchical subcortical sub-regional shape network analysis in alzheimer's disease. *Neuroscience*, 366:70–83, 2017.
  - [3] Jingyuan Li, Moishe Leo Keselman, and Eli Shlizerman. Openlabcluster: Active learning based clustering and classification of animal behaviors in videos based on automatically extracted kinematic body keypoints. *bioRxiv*, 2022.
  - [4] Jingyuan Li and Eli Shlizerman. Iterate & cluster: Iterative semi-supervised action recognition. *arXiv preprint arXiv:2006.06911*, 2020.
  - [5] Jingyuan Li and Eli Shlizerman. Sparse semi-supervised action recognition with active learning. *arXiv preprint arXiv:2012.01740*, 2020.
  - [6] Xiaoying Tang, Na Chen, Siyun Zhang, Jeffery A Jones, Baofeng Zhang, Jingyuan Li, Peng Liu, and Hanjun Liu. Predicting auditory feedback control of speech production from subregional shape of subcortical structures. *Human Brain Mapping*, 2017.
- Abstract Subcortical Surface Brain Network Abnormality in Alzheimer's Disease, 2017th Organization for Human Brain Mapping Conference.