Tingfung Lau

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Education

Bachelor of Computer Science (Yao Class) **Sep 2014 to present**
Institute for Interdisciplinary Information Sciences
Tsinghua University
GPA: 90.59/100
Rank: 6/30

Honors and Awards

26th International Olympiad in Informatics	Second Prize
ACM ICPC 2014 Mudanjiang Regional	First Prize
2016 Astar Baidu Programming Contest	Third Prize

Research Experiences

Technical Strategies Group, Microsoft Research Asia **Mar 2015 to Jan 2016**
Research Intern, supervised by Eric Chang

- Project: Automatic sleep stage classification based on heart rate and other data collected by Microsoft Band.
- Parse and clean the data collected from hosptial. Build the automatic classification algorithm based on Recurrent Neural Network. Do experiments for the best settings of neural network models.
- Implement an efficient C++ version of the algorithm to help integration of the algorithm in Microsoft product.

Model Group, Megvii Inc. (Face++) **Oct 2016 to Jan 2017**
Research Intern

- Project: Compression of Convolutional Nerual Networks by using lower precision in representing the weights and activations.
- Reproduce XNOR Net, the state-of-art neural network using only 1 bit to represent weights and activations. We also test any other combination of presisions like 1,2,4 bits in weights or activations.

- Run experiments in search of a better estimation of gradients than the Straight Through Estimator used in XNOR.

Deparment of Computer Sciences, University of Rochester **Feb 2017 to Jun 2017**

Visting Student, supervised by Jiebo Luo

- Project: Detection of urban factilities like street light or fire hydrants in Video.
- Organize the data collected by our co-worker in China. Build a data annotator to efficently annotate the data.
- Use YOLO9000 CNN Detection Network as the base of algorithm. I change the loss to fit the object size in our task and then post processing the detection result in each frame of video improve the detection

Deparment of Computer Sciences, Stanford University **Jul 2017 to Aug 2017**

Research Intern, supervised by Stefano Ermon

- Project: Adversarial Examples in Natural Language Processing
- Generalize the idea of adversarial examples in image processing tasks to propose the definition of advesarial examples in short text cassifcation task.
- Design an algorithm to find such examples. Examine the algorithm on combination of 4 different data sets and 4 machine learning models. We wrote a paper under review of ICLR 2018.

Technical Strategies Group, Microsoft Research Asia **Sep 2017 to Now**

Research Intern, supervised by Eric Chang

- Project: 3D Image Alignment for Medical Images Image
- Propose a 3D Alignment network based on 3d convolution. Learn the alignment using a unsupervised training method to reduce the need to expansive label data.
- Voxelize 3D Models of daily objects in ShapeNet and apply spatial deformation to it and synthesize extra data.

Publications

Tingfung Lau, Volodymyr Kuleshov, Shantanu Thakoor and Stefano Ermon . "Adversarial Examples for Natural Language Classification Problems" *Under Review of International Conference on Learning Representations,* 2018. https://openreview.net/forum?id=r1QZ3zbAZ

Skills

- I am experienced programmer of C++ and Python and also know how to use MATLAB, Java. I can use machine learning framework like Tensorflow to build a neural network.
- I know a lot about neural networks. From the very basic structure like fully connected networks, CNN, RNN to the most advanced result like Resnet, Densenet, LSTM with attention. During my research, I regularly read papers on top conferences and arXiv to keep myself updated with the current advances in machine learning.
- During previous years, I have built a wide background in many applications of machine

learning including computer vision, natural language processing, medical image processing, signal processing.

- I have studied algorithm design before. I am familiar with algorithm like network flow, greedy, dynamic programming. I won lots of prizes in programming contenst on algorithm like OI and ACM.