

Boyu Liu

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EDUCATION

Carnegie Mellon University – School of Computer Science

M.S. in Machine Learning | GPA: 4.17

Selected Courses: Computer Vision | Advanced Machine Learning | Probability and Mathematical Statistics | Deep Learning

Pittsburgh, PA

Expected Dec.2019

The Hong Kong University of Science and Technology (HKUST)

B.S., double major in Computer Science & Mathematics | GPA: 4.141

Honors: First Class Honor | Academic Achievement Medal | Full Recruitment Scholarship | HKSAR Government Scholarship

Hong Kong

June 2018

Cornell University

Exchange Program | GPA: 4.069 | Research with Professor Claire Cardie

Ithaca, NY

May 2017

WORK EXPERIENCE

Facebook – Intern in Notification Machine Learning Team

Infra development and ML application (under mentoring of Eduardo Billo)

Menlo Park, CA

Summer 2019

- Built an internal tool to better understand the contribution of ML models to final decision on notification filtering.
- Performed offline and online experiments on training and applying ML models to achieve better metrics.
- Improved infra design and Dev-efficiency.

Microsoft Research Asia – Intern in Visual Computing Group

Object tracking with Neighborhood-Component-Analysis (with Zhirong Wu and Jifeng Dai)

Beijing, China

Summer 2018

- Integrated background information to Siamese Networks using neighborhood-component-analysis (NCA) end-to-end.
- Built a well-defined probability description of the object being target, and provided a natural way for online updating.
- Improved performance by ~15% over Siamese-FC, achieved state-of-the-art.

Tencent YouTu Lab – Intern in Machine Learning Group

Semantic Segmentation (under supervision of Professor Yu-Wing Tai)

Shenzhen, China

Winter 2017

- Applied semantic segmentation to segment humans and identifying skylines, using deep learning with small networks.
- Developed models that have been integrated to internal libraries.

SenseTime Group Limited – R&D Intern

3D Face Reconstruction (with Jiahao Pang and Wenxiu Sun)

Hong Kong

Summer 2017

- Used Neural Networks to reconstruct a pose/expression-invariant 3D face from a set of 2D photos of an individual.
- Showed great improvement using LSTM than just using single photo for reconstruction.
- Produced results better than state-of-the-art in synthetic data, and identifiable 3D face with details from real photos.

ACADEMIC RESEARCH & PROJECTS

Deep Learning Interpretability and Generalization (DL) – Research Assistant

Under supervision of Professor Simon Lucey

Carnegie Mellon University

Present

- Performing experiments on neural networks memorization versus generalization.
- Studying theoretical bounds and underlying mechanisms in neural network generalization ability.

Memory Augmented Object Tracking (CV, DL) – Research Assistant

Under supervision of Professor Chi-Keung Tang and Yu-Wing Tai

HKUST

Fall 2017 & Spring 2018

- Built a system using deep neural network augmented with an external memory, which was a one-shot learning method that did not need back-propagation to refine network during tracking. Achieved good results in VOT2016 benchmark.
- Performed better than state-of-the-art trackers in cases like occlusion, large-scale shape change, confusing backgrounds.
- Arxiv Paper: <https://arxiv.org/abs/1711.09414>; Project page: <https://bliuag.github.io/MAVOT-Project-Page/>

Sentiment Lexicon Induction (NLP) – Independent Study

Under supervision of Professor Claire Cardie

Cornell University

Spring 2017

- Used semi-supervised learning to generate Sentiment Lexicon for certain domains of Chinese corpus.
- Used Word2Vec and unique features for Chinese like character/radical-level similarity.

Sentiment and Market Prediction (NLP) – Undergraduate Research Opportunity Program

Under supervision of Professor Qiang Yang

HKUST

Fall 2016

- Implemented a system on using Chinese News to predict the stock market. (Accuracy of 57+% on the test data.)

SKILLS

Programming Languages: Python | C++ | Hack (PHP) | Java (Android) | MATLAB | JavaScript

Algorithm and Data Structure: 9th place in ACM-ICPC(Taiwan) contest | Common algorithms and data structures

Deep Learning: CNN | RNN, LSTM | GAN | Framework: TensorFlow, Caffe, Pytorch | Related: OpenCV, Linux

Selected Course: Artificial Intelligence (CMU, Cornell) | Computer Graphics (Stanford) | Honor Design and Analysis of Algorithms | Honors Software Engineering | Computer Vision | Machine Learning | Statistics | Deep Learning