

# Ji Lin

lin-j14@mails.tsinghua.edu.cn | <http://linji.me> | (+86)18813035808

## EDUCATION

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### Tsinghua University

BEng in Electronic Engineering

- GPA: 91/100
- China National Scholarship, Cai Xiong Scholarship, Spark Scientific and Technological Innovation Program

Beijing, China

Aug 2014 – June 2018

## PUBLICATIONS

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- [1] Y. He, **J. Lin**, S. Han, AMC: Automatic Model Compression and Acceleration with Reinforcement Learning, *submitted to ECCV 2018*
  - [2] Y. Rao, **J. Lin**, B. Liu, J. Lu, SkeletonCNN: Affine-invariant Feature Learning for Skeleton-Based Human Analysis, *submitted to ECCV 2018*
  - [3] Y. Gao\*, H. Xu\*, **J. Lin**, F. Yu, S. Levine, T. Darrell, Reinforcement Learning from Imperfect Demonstrations, *in ICLR 2018 Workshop/submitted to ICML 2018* [\[pdf\]](#)
  - [4] Y. Rao, **J. Lin**, J. Lu, J. Zhou, Runtime Network Routing for Efficient Image Classification, *submitted to T-PAMI, 2018*
  - [5] **J. Lin**\*, Y. Rao\*, J. Lu, J. Zhou, Runtime Neural Pruning, *in NIPS 2017* [\[pdf\]](#)
  - [6] Y. Rao, **J. Lin**, J. Lu, J. Zhou, Learning Discriminative Aggregation Network for Video-based Face Recognition, *in ICCV 2017 (spotlight presentation)* [\[pdf\]](#)
  - [7] **J. Lin**, L. Ren, J. Lu, J. Feng, J. Zhou, Consistent-aware Deep Learning for Person Re-identification in a Camera Network, *in CVPR 2017 (spotlight presentation)* [\[pdf\]](#)
- \* Equal Contribution

## RESEARCH EXPERIENCE

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### Google AI China Center

Remote Research Assistant to Prof. Song Han, Assistant Professor at MIT EECS

Beijing, China

Nov 2017 – Now

#### Automatic Network Surgery with Reinforcement Learning

- Design a framework for automatic network compression (pruning & quantization) with reinforcement learning, to find the best trade-off between performance and inference speed/model size.
- Achieve required inference speed/model size by designing specific reward function and path planning.
- Maintain certain generality for few-shot learning.

### Tsinghua University (Department of Automation)

Research Assistant to Prof. Jiwen Lu, Tsinghua Intelligent Vision Group (IVG)

Beijing, China

March 2017 – May 2017

#### Dynamical Network Pruning with Reinforcement Learning

- Developed a method to dynamically prune the neural network according to the difficulty of an input image at runtime, scalable to existing neural network structures.
- Modeled the pruning as a bottom-up, layer-by-layer MDP, solved by reinforcement learning. Addressed the problem of large action space and long trajectory.
- Proved the effectiveness of sample-specific inference. Achieved much better speed-accuracy tradeoff on CIFAR and ImageNet
- Paper accepted by NIPS'17 as first author

### Tsinghua University (Department of Automation)

Research Assistant to Prof. Jiwen Lu, Tsinghua Intelligent Vision Group (IVG)

Beijing, China

Jan 2017 – April 2017

#### Combine Adversarial Learning and Metric Learning for Efficient Video Face Recognition

- Developed an aggregation method that produces few high-quality images from redundant and noisy face videos
- Combined adversarial learning and metric learning to make the generated image realistic and discriminative in the feature space, which speeds up the recognition and improves accuracy
- Paper accepted by ICCV'17 as second author (spotlight presentation)

### Tsinghua University (Department of Automation)

Research Assistant to Prof. Jiwen Lu, Tsinghua Intelligent Vision Group (IVG)

Beijing, China

June 2016 – November 2016

#### Consistent-aware Deep Person Re-identification in a Camera Network

- Among the first attempts to address the inconsistency problem in multi-camera person re-identification
- Modeled multi-camera re-identification as an optimization problem and solved with gradient descent to eliminate the inconsistency, which also guides the back-propagation in the training phase
- Paper accepted by CVPR'17 as first author (spotlight presentation)

**Tsinghua University (Department of Electronic Engineering)**  
Research Assistant to Prof. Yu Wang, Tsinghua EE NICS lab, co-Founder  
of DeePhi Technology

Beijing, China  
Nov 2015 – May 2016

#### **Deep Learning Acceleration Framework for Mobile Low-Power Platform**

- Developed hardware-based inference acceleration framework for mobile low-power platform, including cell phones, drones, etc.
- Coded with OpenCL to make use of mobile embedded GPU. Built up CPU & GPU pipeline for an efficient system. Achieved faster speed and better power efficiency
- Realized a significant speed-up (up to 50x) for CNN inference. Won third prize in IEEE LPIRC'16

#### **WORK EXPERIENCE**

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##### **SenseTime Group Limited (China's leading deep learning start-up)**

Vision Researcher, Detection Team

Beijing, China  
Jan 2017 – Apr 2017

- Developed algorithms on semi-supervised face detection, and more efficient training with large-scale dataset
- Explored efficient models for object detection (part of the results were deployed in real products).

##### **Google AI China Center**

AI Intern Researcher

Beijing, China  
Feb 2018 – Now

- Design a framework for automatic network compression (pruning & quantization) with reinforcement learning), which is fully automated and scalable to all kinds of network structures.
- New efficient trained network compression method.

#### **SELECTED AWARDS AND HONORS**

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- China National Scholarship (highest level of scholarship set by the government of China)
- Cai Xiong Scholarship (top 10 out of 3300 Tsinghua students for excellent scientific potential)
- Spark Scientific and Technological Innovation Program (top 50 out of 3300 Tsinghua students)
- Third Prize in IEEE 2016 Low Power Image Recognition Challenge (LPIRC'16)
- Annual Academic Excellent Award, 2015-2017 (top ~5% out of 262 students)
- Annual Comprehensive Excellent Award, 2015-2017 (top ~5% out of 262 students)
- First Prize in 17<sup>th</sup> Electronic Design Contest, Tsinghua University (rank No.1 in 400 entrants)
- Scholarship of Freshmen 2014, Tsinghua University (top 10 in College Entrance Exam)

#### **ADDITIONAL INFORMATION**

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- Extracurricular Activities: Photography Team of Tsinghua Student Art Troupe (Mar 2015 – now), Student Union of EE Dept. (2015), Student Union of Tsinghua University (2015)
- Programming Skills: Proficient in Python, C/C++, Matlab, Java, Caffe, PyTorch
- Languages: Mandarin Chinese (native), English (proficient)