

# Ji Lin

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

## EDUCATION

---

### Tsinghua University

BEng in Electronic Engineering

- GPA: 91/100 (ranked in top 10% out of 262)

- China National Scholarship, Cai Xiong Scholarship, Spark Scientific and Technological Innovation Program

### University of California, Berkeley

Visiting student

- Research Assistant at UC Berkeley Artificial Intelligence Research (BAIR) lab
- Advisor: Prof. Trevor Darrell and Prof. Sergey Levine

Beijing, China

Aug 2014 – June 2018

Berkeley, USA

June 2017 – Nov 2017

## PUBLICATIONS

---

- [1] **J. Lin**, D. Wang, D. Zhang, P. Krahenbuhl, T. Darrell, F. Yu, Deep 3D Vehicle Tracking using Region-based LSTMs, submitted to 2018 IEEE Conference on Computer Vision and Pattern Recognition (CVPR'18) [[pdf](#)]
- [2] Y. Gao\*, H. Xu\*, **J. Lin**, F. Yu, S. Levine, T. Darrell, Reinforcement Learning from Imperfect Demonstrations, submitted to 2018 International Conference on Learning Representations (ICLR'18) [[pdf](#)]
- [3] **J. Lin\***, Y. Rao\*, J. Lu, J. Zhou, Runtime Neural Pruning, in 2017 Conference on Neural Information Processing Systems (NIPS'17) [[pdf](#)]
- [4] Y. Rao, **J. Lin**, J. Lu, J. Zhou, Learning Discriminative Aggregation Network for Video-based Face Recognition, in 2017 IEEE International Conference on Computer Vision (ICCV'17) (spotlight presentation) [[pdf](#)]
- [5] **J. Lin**, L. Ren, J. Lu, J. Feng, J. Zhou, Consistent-aware Deep Learning for Person Re-identification in a Camera Network, in 2017 IEEE Conference on Computer Vision and Pattern Recognition (CVPR'17) (spotlight presentation) [[pdf](#)]

\* *Equal Contribution*

## RESEARCH EXPERIENCE

---

### Google Brain, Mountain View

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

Mountain View, USA

Nov 2017 – Now

### Ongoing: 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.
- Discover efficient network structures from the surgery results.

### University of California, Berkeley (Department of Computer Science)

Research Assistant to Prof. Trevor Darrell, co-Director of Berkeley Artificial Intelligence

Berkeley, USA

June 2017 – Nov 2017

Research (BAIR), Director of Berkeley's DeepDrive (BDD)

### Deep 3D Vehicle Tracking with Synthetic Dataset

- Developed a novel method using a region-based recurrent tracking architecture that can obtain accurate 3D trajectories of moving vehicles from monocular dash cam videos.
- Hacked the GTA V game as a simulator for autonomous driving; collected a new large-scale dataset of visual observation and rich annotations, including 2D/3D bounding box, geo-information, tracking ID, etc.
- Submitted a paper to 2018 Computer Vision and Pattern Recognition (CVPR) conference

### University of California, Berkeley (Department of Computer Science)

Research Assistant to Prof. Trevor Darrell, co-Director of BAIR, and Prof. Sergey Levine

Berkeley, USA

June 2017 – Oct 2017

### Learning from Imperfect Demonstrations with Reinforcement Learning

- Designed a unified framework based on soft Q-Learning and policy gradient that jointly learns from human demonstration and in-environment exploration, which greatly accelerates the overall learning process
- Addressed the problem of significant performance drop when switching to in-environment exploration. Be able to handle noisy demonstration data.
- Validated our method in TORCS and GTA V to show the effectiveness in driving tasks
- Submitted a paper to 2018 International Conference on Learning Representations (ICLR) conference

### 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)**

Beijing, China

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

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)**

Beijing, China

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

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)**

Beijing, China

Research Assistant to Prof. Yu Wang, Tsinghua EE NICS lab, co-Founder of DeePhi Technology

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**

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

Beijing, China

Vision Researcher, Detection Team

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).

---

**SELECTED AWARDS AND HONORS**

- 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**

- 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)