# JI LIN

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## EDUCATION

**Tsinghua University** Beijing, China
BEng in Electronic Engineering Aug 2014 – June 2018

- GPA: 91/100 (ranked in top 10% out of 262)
- China National Scholarship, Cai Xiong Scholarship, Comprehensive Scholarship (top 5% out of 262, awarded for outstanding academic performance and extracurricular achievement)
- Admitted to Spark Scientific and Technological Innovation Program, top 50 out of 3300 Tsinghua students.
- Admitted on basis of top-ranked performance on Tsinghua early decision admissions exam
- Visiting student at UC Berkeley Artificial Intelligence Research lab (summer 2017), assisted top professors with AI research

## 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)
[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)
[3] **J. Lin**, Y. Rao, J. Lu, J. Zhou, Runtime Neural Pruning, to appear on 2017 Conference on Neural Information Processing Systems (NIPS'17) [pdf]
[4] Y. Rao, **J. Lin**, J. Lu, 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]

## RESEARCH EXPERIENCE

**University of California, Berkeley (Department of Computer Science)** Berkeley, USA
Research Assistant to Professor Trevor Darrell, co-Director of Berkeley Artificial Intelligence Research (BAIR), Director of Berkeley's DeepDrive (BDD) June 2017 – Present

**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 inner data, 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)** Berkeley, USA
Research Assistant to Professor Trevor Darrell, co-Director of Berkeley Artificial Intelligence Research (BAIR), and Professor Sergey Levine June 2017 – Present

**Learning from Imperfect Demonstrations with Reinforcement Learning**

- Designed a unified framework based on Soft Q-Learning and Value 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 and multi-modality data
- Validated our method on Enduro, TORCS and GTA V to show the effectiveness on driving tasks
- Submitted a paper to 2018 International Conference on Learning Representations (ICLR) conference

**Tsinghua University (Department of Automation)** Beijing, China
Research Assistant to Professor Jiwen Lu, Tsinghua Intelligent Vision Group (IVG) March 2017 – May 2017

**Dynamical Network Pruning with Reinforcement Learning**

- Developed method to dynamically prune the neural network according to the difficulty of 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
- Submitted a paper to 2017 Conference on Neural Information Processing Systems (NIPS'17) as first author

**Tsinghua University (Department of Automation)** Beijing, China

Research Assistant to Professor 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 single high-quality image from redundant and noisy face video
- Combining adversarial learning and metric learning to make the generated image realistic and discriminative in the feature space, which speeds up the recognition greatly and improves accuracy
- Paper accepted by ICCV'17 as second author (spotlight presentation)

**Tsinghua University (Department of Automation)** Beijing, China

Research Assistant to Professor 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 Professor 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.
- Coding with OpenCL to make use of mobile embedded GPU. Building up CPU & GPU pipeline for efficient system. Achieved faster speed and 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** Beijing, China

Vision Researcher, Detection Team Jan 2017 – Mar 2017

- China's leading deep learning startup
- Developed algorithm 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$^{th}$ Electronic Design Contest, Tsinghua University (rand 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, TensorFlow, Android
- Languages: Mandarin Chinese (native), English (proficient)