

# YUANDONG TIAN

## RESEARCH INTEREST

Reinforcement Learning, Theory and practice of Deep Learning, Optimization, Computer Vision.

## WORK EXPERIENCE

Jan.2015-present      **Research Scientist and Manager**  
Facebook Artificial Intelligence Research (FAIR)  
*Research Lead in Reinforcement Learning.*  
*Tech Lead and Manager of Facebook Go engine.*  
*DarkForestGo (2015), ELF OpenGo (2018).*  
*Tech Lead of distributed reinforcement learning system (ELF).*  
*Theoretical analysis of optimization in non-convex neural networks.*

Sep.2013-Dec.2014      **Robotics Researcher / Software Engineer**  
Vision and Learning Group, Driverless Car Team (Waymo), Google X  
*Real-time object recognition for autonomous driving car.*

## EDUCATION

Sep.2008-Sep.2013      **Ph.D** in Robotics  
Carnegie Mellon University

Sep.2005-Jun.2008      **Master** in Computer Science & Engineering  
Shanghai Jiao Tong University

Sep.2001-Jun.2005      **Bachelor** in Computer Science & Engineering  
Shanghai Jiao Tong University

## PATENT

Dec.2014      Undisclosed patent, *Google Self-driving Car*

## AWARDS AND SCHOLARSHIP

Dec.2013      Recipient of ICCV 2013 **Marr Prize Honorable Mentions.**

Feb.2011      Recipient of **Microsoft Research PhD Fellowship** (2011-2013)

## PAPER REVIEWS

Reviewers      CVPR, ICCV, ECCV, Eurographics, ICCP, ACM SIGCHI, AAAI  
PAMI, IJCV, TIP, ICML, NIPS, ICLR, UAI

## SKILLS

Software      C/C++, Python, LUA/torch, Matlab

Languages      Mandarin Chinese (Native), English, Japanese

## ARXIV

[1] Bolei Zhou, **Yuandong Tian**, Sainbayar Sukhbaatar, Arthur Szlam, Rob Fergus, *Simple Baseline for Visual Question Answering*, arXiv, 2016.

## JOURNAL PUBLICATIONS

- [1] Jiajun Wu, Tianfan Xue, Joseph J. Lim, **Yuandong Tian**, Joshua B. Tenenbaum, Antonio Torralba, William T. Freeman, *3D Interpreter Networks for Viewer-Centered Wireframe Modeling*, International Journal of Computer Vision (IJCV), Jul. 2015.
- [2] **Yuandong Tian**, Srinivasa G. Narasimhan, *Theory and Practice of Hierarchical Data-driven Descent for Optimal Deformation Estimation*, International Journal of Computer Vision (IJCV), Jul. 2015.
- [3] **Yuandong Tian**, Srinivasa G. Narasimhan, *Globally Optimal Estimation of Nonrigid Image Distortion*, International Journal of Computer Vision (IJCV), Nov. 2011.
- [4] Mohit Gupta, **Yuandong Tian**, Srinivasa G. Narasimhan, Li Zhang, *A Combined Theory of Defocused Illumination and Global Light Transport*, International Journal of Computer Vision (IJCV), Sep. 2011.

## SELECTED CONFERENCE PUBLICATIONS

- [1] Simon S. Du, Jason D. Lee, **Yuandong Tian**, Barnabas Poczos, Aarti Singh, *Gradient Descent Learns One-hidden-layer CNN: Don't be Afraid of Spurious Local Minima*, International Conference on Machine Learning (ICML) 2018.
- [2] Simon S. Du, Jason D. Lee, **Yuandong Tian**, *When is a Convolutional Filter Easy to Learn?* International Conference on Learning Representations (ICLR) 2018.
- [3] **Yuandong Tian**, Qucheng Gong, Wenling Shang, Yuxin Wu, C. Lawrence Zitnick, *ELF: An Extensive, Lightweight and Flexible Research Platform for Real-time Strategy Games*, Advances in Neural Information Processing (NIPS) 2017 (Oral presentation).
- [4] **Yuandong Tian**, *An Analytical Formula of Population Gradient for two-layered ReLU network and its Applications in Convergence and Critical Point Analysis*, International Conference on Machine Learning (ICML), 2018.
- [5] Yan Zhu, **Yuandong Tian**, Dimitris Mexatas, Piotr Dollar, *Semantic Amodal Segmentation*, Computer Vision and Pattern Recognition (CVPR), 2017.
- [6] Yuxin Wu, **Yuandong Tian**, *Training Agent for First-Person Shooter Game with Actor-Critic Curriculum Learning*, International Conference on Learning Representations (ICLR), 2018.
- [7] Jiajun Wu, Tianfan Xue, Joseph J. Lim, **Yuandong Tian**, Joshua B. Tenenbaum, Antonio Torralba, William T. Freeman, *Single Image 3D Interpreter Network*, European Conference on Computer Vision (ECCV), 2016 (Oral presentation).
- [8] **Yuandong Tian**, Yan Zhu, *Better Computer Go Player with Neural Network and Long-term Prediction*, International Conference on Learning Representations (ICLR), 2016.
- [9] **Yuandong Tian**, Srinivasa G. Narasimhan: *Hierarchical Data-Driven Descent for Efficient Optimal Deformation Estimation*, International Conference on Computer Vision (ICCV), 2013 (**Marr Prize Honorable Mentions**).
- [10] Nan Li, **Yuandong Tian**, William W. Cohen, Ken Koedinger: *Integrating Perceptual Learning with External World Knowledge in a Simulated Student*, Proceedings of the 16th International Conference on Artificial Intelligence in Education, 2013.
- [11] **Yuandong Tian**, C. Lawrence Zitnick, Srinivasa G. Narasimhan: *Exploring the Spatial Hierarchy of Mixture Models for Human Pose Estimation*, European Conference on Computer Vision

(ECCV), 2012

[12] **Yuandong Tian**, Jun Zhu: *Learning from Crowds in the Presence of Schools of Thought*, ACM International Conference on Knowledge Discovery and Data Mining (SIGKDD), 2012.

[13] **Yuandong Tian**, Srinivasa G. Narasimhan, Alan J. Vannevel: *Depth from Optical Turbulence*, Computer Vision and Pattern Recognition (CVPR) 2012.

[14] **Yuandong Tian**, Srinivasa G. Narasimhan: *Rectification and 3D reconstruction of Curved Document Images*, Computer Vision and Pattern Recognition (CVPR) 2011, (**Oral Presentation**), 3.5% acceptance).

[15] Dong Huang, **Yuandong Tian**, Fernando De la Torre, *Local Isomorphism to Solve the Pre-image Problem in Kernel Methods*, Computer Vision and Pattern Recognition (CVPR) 2011.

[16] **Yuandong Tian**, Srinivasa G. Narasimhan: *A Globally Optimal Data-Driven Approach for Image Distortion Estimation*, Computer Vision and Pattern Recognition (CVPR) 2010, (**Oral Presentation**, 4% acceptance).

[17] **Yuandong Tian**, Srinivasa G. Narasimhan: *Seeing through water: Image restoration using model-based tracking*, International Conference on Computer Vision (ICCV) 2009.

[18] Mohit Gupta, **Yuandong Tian**, Srinivasa G. Narasimhan, Li Zhang: *(De)Focusing on Global Light Transport for Active Scene Recovery*, IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2009, (**Oral Presentation**, 3.5% acceptance).

[19] Shifeng Chen, **Yuandong Tian**, Fang Wen, Ying-Qing Xu, Xiaoou Tang: *Easytoon: an easy and quick tool to personalize a cartoon storyboard using family photo album*, ACM Multimedia 2008.

[20] **Yuandong Tian**, Wei Liu, Rong Xiao, Fang Wen, Xiaoou Tang: *A Face Annotation Framework with Partial Clustering and Interactive Labeling*, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2007.

[21] Jingyu Cui, FangWen, Rong Xiao, **Yuandong Tian**, Xiaoou Tang: *EasyAlbum: An Interactive Photo Annotation System Based on Face Clustering and Re-ranking*, ACM Conference on Human Factors in Computing Systems (CHI) 2007.

[22] Rong Xiao, Wu-Jun Li, **Yuandong Tian**, Xiaoou Tang: *Joint Boosting Feature Selection for Robust Face Recognition*, IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2006.