

TIANFAN XUE

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Research Interests

- Computer vision, image processing, machine learning, and computer graphics

Education

- **Ph.D. (Computer Sci.), Massachusetts Institute of Technology** Aug. 2012 – Aug. 2017
– Supervisor: Prof. William T. Freeman
- **M.Phil. (Information Eng.), Chinese University of Hong Kong** Aug. 2009 – Jul. 2011
– GPA: 4.0/4.0, Supervisor: Prof. Xiaoou Tang
- **B. Eng. (Computer Sci. & Tech.), Tsinghua University** Aug. 2005 – Jul. 2009
– GPA: 92.06/100.00, Ranking: 3/162

Working Experience

- **Software Engineer, Google** Aug. 2017 – Current
– Mission: Research on better image and video processing algorithms
- **Research Intern, Facebook** May. 2016 – Aug. 2016
– Mentor: Dr. Richard Szeliski
- **Research Intern, Microsoft Research** Jun. 2015 – Sept. 2015
– Mentor: Dr. Richard Szeliski
- **Research Intern, Microsoft Research** Jun. 2014 – Aug. 2014
– Mentor: Dr. Ce Liu
- **Research Assistant, Chinese University of Hong Kong** Aug. 2011 – Jul. 2012
– Supervisor: Prof. Xiaoou Tang

Publications

- S. Oron, T. Dekel, **T. Xue**, W. T. Freeman, S. Avidan, “Best-Buddies Similarity – Robust Template Matching using Mutual Nearest Neighbors,” *IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI)*, 2017.
- **T. Xue***, J. Wu*, K. L. Bouman, W. T. Freeman, “Visual Dynamics: Probabilistic Future Frame Synthesis via Cross Convolutional Networks,” in *Proc. of the Annual Conference on Neural Information Processing Systems (NIPS)* 2016.¹
- J. Wu*, **T. Xue***, J. Lim, Y. Tian, J. Tenenbaum, A. Torralba, W. T. Freeman, “Single Image 3D Interpreter Network,” in *Proc. of European Conference on Computer Vision (ECCV)* 2016.
- **T. Xue**, M. Rubinstein, C. Liu, W. T. Freeman, “A Computational Approach for Obstruction-Free Photography,” *ACM SIGGRAPH*, 2015.

¹* indicates equal contribution.

- **T. Xue**, H. Mobahi, F. Durand, W. T. Freeman, “The Aperture Problem for Refractive Motion,” in Proc. of IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2015.
- **T. Xue**, M. Rubinstein, N. Wadhwa, A. Levin, F. Durand, W. T. Freeman, “Refraction Wiggles for Measuring Fluid Depth and Velocity from Video,” in Proc. of European Conference on Computer Vision (**ECCV**), 2014.
- **T. Xue**, J. Liu, X. Tang, “Example-Based 3D Object Reconstruction for Line Drawing,” in Proc. of IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2012.
- Y. Li, **T. Xue**, L. Sun, J. Liu, “Joint Example-based Depth Map Super-Resolution,” in Proc. of IEEE International Conference on Multimedia & Expo (**ICME**), 2012.
- **T. Xue**, J. Liu, X. Tang, “Symmetric Piecewise Planar Object Reconstruction from a Single Image,” in Proc. of IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**) 2011.
- Y. Jie, L. Sun, **T. Xue**, “Fast Frame-rate Up-conversion of Depth Video via Video Coding,” in Proc. of ACM Multimedia 2011 (**ACM MM**), 2011.
- **T. Xue**, J. Liu, X. Tang, “3D Modeling from a Single View of a Symmetric Object,” Transactions on Image Processing (**TIP**), 2012.
- **T. Xue**, J. Liu, X. Tang, “Object Cut: Complex 3D object reconstruction through line drawing separation,” in Proc. of IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**) 2010.
- Y. Tang, **T. Xue**, J. Jiang, B. Liu, “Deflation DFA: Remembering History is Adequate,” in Proc. of IEEE International Conference on Communications (**ICC**), 2010.

Research Experience

- **Facebook, Research Intern** May. 2016 – Aug. 2016
– Large scale 3D reconstruction.
- **Microsoft Research, Research Intern** Jun. 2015 – Sept. 2015
– **Multi-frame Stereo**. Proposed a fast multi-frame stereo algorithm that based on sparse edge matching.
- **Microsoft Research, Research Intern** Jun. 2014 – Aug. 2014
– **Obstruction-free imaging**. Proposed a unified computational approach for taking photos through reflecting or occluding visual obstructions, such as windows and fences.
- **Massachusetts Institute of Technology, Research Assistant** Aug. 2012 – Current
– **Fluid measurement**. Proposed an algorithm for measuring the velocity and 3D location of refractive fluids (e.g hot air), from natural sequences.
- **The Chinese University of Hong Kong, Research Assistant** Aug. 2009 – Jul. 2012
– **3D Reconstruction from Line Drawing**. Proposed an example-based reconstruction that recovers the 3D geometry from a line drawing by combining basic shapes in a 3D database. Also improve the efficiency and accuracy of the algorithm using a divide-and-conquer method.
- **Undergraduate Final Year Research Project, Tsinghua University** Jan. 2009 – Jul. 2009
Supervisor: Prof. Bo Zhang, State Key Laboratory of Intelligent Technology and Systems
– **Pedestrian tracking**. Designed a human tracking framework using particle filter and HOG features (*Outstanding undergraduate thesis* of Tsinghua Univ).

Honors and Awards

- Postgraduate Studentship in the Chinese University of Hong Kong 2009–2011
- Outstanding TA Award in the Chinese University of Hong Kong 2010
- Outstanding undergraduate thesis of Tsinghua University 2009
- National Scholarship 2007

Services

- **Conference reviewer:** SIGGRAPH Asia 2017, ICCV 2017, CVPR 2017, ISCAS 2017, NIPS 2016, ECCV 2016, CVPR 2016
- **Journal reviewer:** Transactions on Pattern Analysis and Machine Intelligence (TPAMI), IEEE Transactions on Systems, Man and Cybernetics, IEEE Transactions on Computational Imaging (TCI), Artificial Intelligence, Computers and Electrical Engineering, Cognitive Computation, Computers and Electrical Engineering, Machine Vision and Applications, IEEE Computer Graphics and Applications, Journal of the Optical Society of America