

Dr. Yu Xiang

CONTACT INFORMATION	Senior Research Scientist NVIDIA Research (Robotics) 4545 Roosevelt Way NE #400 Seattle, WA 98105	yux@nvidia.com http://yuxng.github.io/ Google Scholar GitHub
RESEARCH INTERESTS	Robotics, Computer Vision, Machine Learning, Deep Learning	
EDUCATION	University of Michigan , Ann Arbor, Michigan, USA Ph.D. in Electrical Engineering: Systems Dissertation: 3D Object Representations for Recognition Advisor: Prof. Silvio Savarese Fudan University , Shanghai, China M.S. in Computer Science Dissertation: Graphic Models for Semantic Context Modeling in Automatic Image Annotation Advisor: Prof. Xiangdong Zhou Fudan University , Shanghai, China B.S. in Computer Science	Sep 2010 – Dec 2015 Sep 2007 – Jul 2010 Sep 2003 – Jul 2007
EXPERIENCE	NVIDIA Research , Seattle, Washington, USA <i>Senior Research Scientist</i> NVIDIA Research , Seattle, Washington, USA <i>Postdoctoral Researcher</i> University of Washington , Seattle, Washington, USA <i>Postdoctoral Researcher</i> <ul style="list-style-type: none">• Advisor: Prof. Dieter Fox Stanford University , Stanford, California, USA <i>Postdoctoral Researcher</i> <ul style="list-style-type: none">• Advisor: Prof. Silvio Savarese Stanford University , Stanford, California, USA <i>Visiting Student Researcher</i> <ul style="list-style-type: none">• Advisor: Prof. Silvio Savarese NEC Laboratories America, Inc. , Cupertino, California, USA <i>Summer Research Intern</i> <ul style="list-style-type: none">• Department: Media Analytics	Jun 2018 – present Jan 2018 – May 2018 Aug 2016 – Dec 2017 Jan 2016 – Jul 2016 Sep 2013 – Dec 2015 Jun 2015 – Sep 2015 May 2014 – Aug 2014
PUBLICATIONS	PoseRBPF: A Rao-Blackwellized Particle Filter for 6D Object Pose Tracking Xinke Deng, Arsalan Mousavian, <i>Yu Xiang</i> , Fei Xia, Timothy Bretl and Dieter Fox In <i>Robotics: Science and Systems (RSS)</i> , 2019. Object Discovery in Videos as Foreground Motion Clustering Christopher Xie, <i>Yu Xiang</i> , Dieter Fox and Zaid Harchaoui In <i>IEEE Conference on Computer Vision and Pattern Recognition (CVPR)</i> , 2019. Neural Autonomous Navigation with Riemannian Motion Policy Xiangyun Meng, Nathan Ratliff, <i>Yu Xiang</i> and Dieter Fox In <i>International Conference on Robotics and Automation (ICRA)</i> , 2019. Deep Object Pose Estimation for Semantic Robotic Grasping of Household Objects Jonathan Tremblay, Thang To, Balakumar Sundaralingam, <i>Yu Xiang</i> , Dieter Fox and Stan Birchfield In <i>Conference on Robot Learning (CoRL)</i> , 2018.	

DeepIM: Deep Iterative Matching for 6D Pose Estimation

Yi Li, Gu Wang, Xiangyang Ji, *Yu Xiang* and Dieter Fox

In *European Conference on Computer Vision (ECCV)*, 2018 (Oral).

PoseCNN: A Convolutional Neural Network for 6D Object Pose Estimation in Cluttered Scenes

Yu Xiang, Tanner Schmidt, Venkatraman Narayanan and Dieter Fox

In *Robotics: Science and Systems (RSS)*, 2018.

Recurrent Autoregressive Networks for Online Multi-Object Tracking

Kuan Fang, *Yu Xiang*, Xiaocheng Li and Silvio Savarese

In *IEEE Winter Conference on Applications of Computer Vision (WACV)*, 2018.

DA-RNN: Semantic Mapping with Data Associated Recurrent Neural Networks

Yu Xiang and Dieter Fox

In *Robotics: Science and Systems (RSS)*, 2017.

Subcategory-aware Convolutional Neural Networks for Object Proposals and Detection

Yu Xiang, Wongun Choi, Yuanqing Lin and Silvio Savarese

In *IEEE Winter Conference on Applications of Computer Vision (WACV)*, pp. 924–933, 2017.

Anticipating Accidents in Dashcam Videos

Fu-Hsiang Chan, Yu-Ting Chen, *Yu Xiang* and Min Sun

In *Asian Conference on Computer Vision (ACCV)*, pp. 136–153, 2016 (Oral).

ObjectNet3D: A Large Scale Database for 3D Object Recognition

Yu Xiang, Wonhui Kim, Wei Chen, Jingwei Ji, Christopher Choy, Hao Su, Roozbeh Mottaghi, Leonidas Guibas and Silvio Savarese

In *European Conference on Computer Vision (ECCV)*, pp. 160–176, 2016 (Spotlight Oral).

Pose Estimation Errors, the Ultimate Diagnosis

Carolina Redondo-Cabrera, Roberto López-Sastre, *Yu Xiang*, Tinne Tuytelaars and Silvio Savarese

In *European Conference on Computer Vision (ECCV)*, pp. 118–134, 2016.

Deep Metric Learning via Lifted Structured Feature Embedding

Hyun Oh Song, *Yu Xiang*, Stefanie Jegelka and Silvio Savarese

In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, pp. 4004–4012, 2016 (Spotlight Oral).

Learning to Track: Online Multi-Object Tracking by Decision Making

Yu Xiang, Alexandre Alahi and Silvio Savarese

In *International Conference on Computer Vision (ICCV)*, pp. 4705–4713, 2015 (Oral).

Data-Driven 3D Voxel Patterns for Object Category Recognition

Yu Xiang, Wongun Choi, Yuanqing Lin and Silvio Savarese

In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, pp. 1903–1911, 2015 (Oral).

A Coarse-to-Fine Model for 3D Pose Estimation and Sub-category Recognition

Roozbeh Mottaghi, *Yu Xiang* and Silvio Savarese

In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, pp. 418–426, 2015.

Monocular Multiview Object Tracking with 3D Aspect Parts

*Yu Xiang**, Changkyu Song*, Roozbeh Mottaghi and Silvio Savarese (*equal contribution)

In *European Conference on Computer Vision (ECCV)*, pp. 220–235, 2014.

Beyond PASCAL: A Benchmark for 3D Object Detection in the Wild

Yu Xiang, Roozbeh Mottaghi and Silvio Savarese

In *IEEE Winter Conference on Applications of Computer Vision (WACV)*, pp. 75–82, 2014.

Object Detection by 3D Aspectlets and Occlusion Reasoning

Yu Xiang and Silvio Savarese

In *IEEE Workshop on 3D Representation and Recognition (3dRR)*, pp. 530–537, 2013.

Object Co-detection

Sid Yingze Bao, *Yu Xiang* and Silvio Savarese

In *European Conference on Computer Vision (ECCV)*, vol. 7572, pp. 86–101, 2014.

Estimating the Aspect Layout of Object Categories

Yu Xiang and Silvio Savarese

In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, pp. 3410–3417, 2012.

Semantic Context Modeling with Maximal Margin Conditional Random Fields for Automatic Image Annotation

Yu Xiang, Xiangdong Zhou, Zuotao Liu, Tat-Seng Chua and Chong-Wah Ngo

In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, pp. 3368–3375, 2010.

Learning Contextual Metrics for Automatic Image Annotation

Zuotao Liu, Xiangdong Zhou, Yu Xiang and Yan-Tao Zheng

In *Advances in Multimedia Information Processing - PCM*, vol. 6297, pp. 124–135, 2010.

A Revisit of Generative Model for Automatic Image Annotation using Markov Random Fields

Yu Xiang, Xiangdong Zhou, Zuotao Liu, Tat-Seng Chua and Chong-Wah Ngo

In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, pp. 1153–1160, 2009.

Adaptive Model for Web Image Semantic Automatic Image Annotation

Hongtao Xu, Xiangdong Zhou, Yu Xiang and Baile Shi

In *Journal of Software (in Chinese)*, vol. 21, no. 9, pp. 2183–2195, 2009.

Exploiting Flickr’s Related Tags for Semantic Annotation of Web Images

Hongtao Xu, Xiangdong Zhou, Yu Xiang and Baile Shi

In *ACM International Conference on Image and Video Retrieval (CIVR)*, no. 46, 2009.

Automatic Web Image Annotation via Web-Scale Image Semantic Space Learning

Hongtao Xu, Xiangdong Zhou, Lan Lin, Yu Xiang and Baile Shi

In *Advances in Data and Web Management*, vol. 5446, pp. 211–222, 2009.

TEACHING EXPERIENCE

Artificial Intelligence , University of Washington, Seattle, Washington, USA	2017
<i>Guest Lectures</i> for Prof. Dieter Fox	
Computer Vision , University of Washington, Seattle, Washington, USA	2017
<i>Guest Lecture</i> for Prof. Linda Shapiro	
Computer Vision , Stanford University, Stanford, California, USA	2016
<i>Guest Lectures</i> for Prof. Silvio Savarese	
The C Programming Language , Fudan University, Shanghai, China	Sep 2009 – Jan 2010
<i>Teaching Assistant</i>	

AWARDS AND HONORS

Outstanding Master’s Thesis Award of Shanghai	2012
---	------

PROFESSIONAL SERVICE

Journal Reviewer

- International Journal of Robotics Research (IJRR)
- IEEE Robotics and Automation Letters (RA-L)
- IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
- International Journal of Computer Vision (IJCV)
- Computer Vision and Image Understanding (CVIU)
- IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)
- IEEE Transactions on Multimedia (TMM)
- IEEE Transactions on Signal Processing (TSP)

Conference Reviewer

- Robotics: Science and Systems Conference (RSS)
- IEEE International Conference on Robotics and Automation (ICRA)
- International Conference on Intelligent Robots and Systems (IROS)
- IEEE International Conference on Robot and Human Interactive Communication (ROMAN)
- IEEE Conference on Computer Vision and Pattern Recognition (CVPR)
- International Conference on Computer Vision (ICCV)
- European Conference on Computer Vision (ECCV)
- Asian Conference on Computer Vision (ACCV)
- British Machine Vision Conference (BMVC)

- International Conference on 3D Vision (3DV)
- Neural Information Processing Systems (NIPS)

Program Chair

- 5th International IEEE Workshop on 3D Representation and Recognition, 2015

Program Committee

- 4th International IEEE Workshop on 3D Representation and Recognition, 2013

Tutorial Organizer

- 3D Object Geometry from Single Image Tutorial at International Conference on 3D Vision, 2016

TALKS

Perceiving the 3D World from Images and Videos

In Nvidia Research, Redmond, Washington, 11/07/2017; University of Michigan, 3/15/2018.

3D Object Recognition and Scene Understanding from RGB-D Videos

In GRASP Lab at University of Pennsylvania, 10/11/2017; Microsoft Research, Redmond, 10/17/2017; Vision Lab at Stanford University, 10/23/2017.

3D Object Recognition and Scene Understanding

In Mitsubishi Electric Research Laboratories, Boston, Massachusetts, 7/14/2017.

DA-RNN: Semantic Mapping with Data Associated Recurrent Neural Networks

In Robotics: Science and Systems, Massachusetts Institute of Technology, Massachusetts, 7/13/2017.

Subcategory-aware Convolutional Neural Networks for Object Proposals and Detection

In IEEE Winter Conference on Applications of Computer Vision, Santa Rosa, California, 3/29/2017.

Tutorial on 3D Object Recognition

In International Conference on 3D Vision, Stanford University, 10/28/2016.

3D Object Representations for Recognition

In Carnegie Mellon University, 3/28/2016; University of Toronto, 4/4/2016; Massachusetts Institute of Technology, 4/12/2016; University of California, Berkeley, 4/21/2016; University of Illinois at Urbana-Champaign, 5/5/2016; University of Washington, 5/31/2016.

3D Object Detection and Pose Estimation

In the 1st International Workshop on Recovering 6D Object Pose in conjunction with ICCV, Santiago, Chile, 12/17/2015.

Learning to Track: Online Multi-Object Tracking by Decision Making

In International Conference on Computer Vision, Santiago, Chile, 12/16/2015.

Data-Driven 3D Voxel Patterns for Object Category Recognition

In IEEE Conference on Computer Vision and Pattern Recognition, Boston, Massachusetts, 06/08/2015.

Monocular Multiview Object Tracking with 3D Aspect Parts

In the 1st Stanford-SNU Workshop on Automated Driving, Stanford University, 02/24/2015.

Beyond PASCAL: A Benchmark for 3D Object Detection in the Wild

In IEEE Winter Conference on Applications of Computer Vision, Steamboat Springs, Colorado, 03/24/2014.

Object Detection by 3D Aspectlets and Occlusion Reasoning

In the 4th International IEEE Workshop on 3D Representation and Recognition in conjunction with ICCV, Sydney, Australia, 12/08/2013.

Estimating the Aspect Layout of Object Categories

In Midwest Vision Workshop, University of Illinois at Urbana-Champaign, 09/21/2012.

SKILLS AND
LANGUAGES

Programming Languages: Python, C/C++, CUDA

Libraries: PyTorch, Tensorflow, OpenCV, OpenGL

Operating Systems: Linux, Windows and Mac OS X

Languages: English, Chinese