# Jia Xu

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**Research Interests**

Computer Vision, Machine Learning, and Deep Learning

**Education**

**Ph.D. in Computer Sciences** — July 2015
University of Wisconsin-Madison, USA
Dissertation: Visual Parsing with Weak Supervision
Committee: Vikas Singh (advisor), Chuck Dyer, Jerry Zhu, Jude Shavlik, Mark Craven

**M.S. in Computer Sciences** — December 2012
University of Wisconsin-Madison, USA

**B.S. in Computer Science and Technology** — June 2010
Nanjing University, China
Magna Cum Laude

**Professional Experience**

**Senior Research Scientist** — August 2015 to Present
Visual Computing Lab, Intel Labs

**Graduate Research Assistant** — June 2011 to July 2015
Department of Computer Sciences, UW-Madison — Advisor: Vikas Singh

**Visiting Student** — August 2014
Department of Computer Science, University of Toronto, Canada — Advisor: Raquel Urtasun

**Visiting Student/Summer Research Intern** — June 2013 to August 2013
Toyota Technological Institute at Chicago (TTI-Chicago) — Advisor: Raquel Urtasun

**Research Assistant/Intern** — September 2010 to May 2011
ApplCore Group, Epic, Madison, WI — Team Leader: Ravindra Karonde

**Publications**

1. **Jia Xu**, René Ranftl, Vladlen Koltun. *Accurate Optical Flow via Direct Cost Volume Processing.* In Computer Vision and Pattern Recognition (CVPR), July 2017.
2. **Jia Xu**, Alexander G. Schwing, Raquel Urtasun. *Learning to Segment with Various Forms of Weak Supervision.* In Computer Vision and Pattern Recognition (CVPR), June 2015.
3. **Jia Xu**, Lopamudra Mukherjee, Yin Li, Jamieson Warner, James M. Rehg, Vikas Singh. *Gaze-enabled Egocentric Video Summarization via Constrained Submodular Maximization.* In Computer Vision and Pattern Recognition (CVPR), June 2015.
4. Hyunwoo Kim, **Jia Xu**, Baba C. Vemuri, Vikas Singh. *Manifold-valued Dirichlet Processes.* International Conference on Machine Learning (ICML), July 2015. **Oral**
5. **Jia Xu**, Alexander G. Schwing, Raquel Urtasun. *Tell Me What You See and I will Show You Where It Is.* In Computer Vision and Pattern Recognition (CVPR), June 2014.

6. **Jia Xu**. *Joint Visual and Textual Mining on Social Media*. IEEE International Conference on Data Mining (ICDM) PhD Forum, December 2014. **Oral**
7. Maxwell D. Collins, Ji Liu, **Jia Xu**, Lopamudra Mukherjee, Vikas Singh. *Spectral Clustering with a Convex Regularizer on Millions of Images*. European Conference on Computer Vision (ECCV), September 2014.
8. **Jia Xu**, Vamsi K. Ithapu, Lopamudra Mukherjee, James M. Rehg, Vikas Singh. *GOSUS: Grassmannian Online Subspace Updates with Structured-sparsity*. International Conference on Computer Vision (ICCV), December 2013.
9. **Jia Xu**, Maxwell D. Collins, Vikas Singh. *Incorporating User Interaction and Topological Constraints within Contour Completion via Discrete Calculus*. Computer Vision and Pattern Recognition (CVPR), June 2013.
10. Lopamudra Mukherjee, Vikas Singh, **Jia Xu**, Maxwell D. Collins. *Analyzing the Subspace Structure of Related Images: Concurrent Segmentation of Image Sets*. European Conference on Computer Vision (ECCV), October 2012.
11. Maxwell D. Collins, **Jia Xu**, Leo Grady, Vikas Singh. *Random Walks based Multi-Image Segmentation: Quasiconvexity Results and GPU-based Solutions*. Computer Vision and Pattern Recognition (CVPR), June 2012.

**Research Grants**

1. 2014 $\sim$ 2015. Adobe Research Gift. $19,000. "Automatic/Interactive Object Segmentation".
2. 2014. NVIDIA Academic Hardware Gift. $\sim$$5,000. "Image Segmentation with Convolutional Neural Networks".
3. 2014. NVIDIA Academic Hardware Gift. $\sim$$5,000. "Group Sparsity Regularized Subspace Tracking for Video Segmentation".
4. 2009 $\sim$ 2010. Sun-China Innovation Grant. CNY 20,000. "Real-time Simulation Of Natural Phenomena: A General Particle System Built for Wonderland".

**Honors and Awards**

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| ICML 2015 Travel Scholarship | 2015 |
| CVPR 2015 Doctoral Consortium | 2015 |
| Vilas Conference Presentation Award | 2014 |
| ICDM 2014 Student Travel Award | 2014 |
| ICCV 2013 Student Travel Award | 2013 |
| Machine Learning Summer School Scholarship | 2011 |
| UW-Epic Research Fellowship | 2010 |
| Excellent Project of Sun-China Innovation Program (Top 6) | 2010 |
| Second Prize in the Innovation Asia 2009 (4/625) | 2009 |
| Hong Kong and Shanghai Bank Corporation (HSBC) Scholarship (Top 1%) | 2009 |
| Runner-up in the 1st Multimedia Design Competition of Nanjing University | 2008 |
| Almon-Wang Scholarship (Top 5%) | 2008 |
| Renming Scholarship (Top 5%) | 2007, 2008 |
| Third Prize in the 9th ACM/ICPC at Nanjing University (Top 20%) | 2007 |

**Teaching Experiences**

**Teaching Assistant** January 2015 to May 2015
CS 766: Computer Vision, UW-Madison Instructor: Vikas Singh

- Top 2 highly rated classes among all the Computer Scinces courses.

**Teaching Assistant** January 2014 to May 2014
CS 766: Computer Vision, UW-Madison Instructor: Vikas Singh

- Create and maintain an online classroom on Canvas. Interact and help students with questions on lectures and assignments
- Introduce a new component to broaden students' sight on modern computer vision advances: students review one paper from the most popular papers (10 $\sim$ 15) in recent CVPR/ICCV/ECCV (with one conference set per week)
- Guide students through class assignments and multi-week final research projects
- Give a guest lecture on scene classification

**Teaching Assistant** January 2013 to May 2013
BMI/CS 767: Methods in Medical Image Analysis, UW-Madison Instructor: Vikas Singh

- Create problem sets for the students to learn computational methods and programming
- Guide students through class assignments and final projects

**Outreach Experiences**

**UW-Madison Science Expeditions** April 2013
Main Organizer for *Interactive Demonstration on Temperature and Volume Expansion*

**Wisconsin Science Festival** October 2012
Main Organizer for *Interactive Parsing/Segmentation of Large Sets of Images*

**Talks/Posters Presentations**

- **SUNw: Scene Understanding Workshop (in conjunction with CVPR 2015)**
  *Learning to Segment with Various Forms of Weak Supervision.* June 2015.
- **Adobe Research, San Jose**
  *Visual Parsing with Weak Supervision.* Host: Dr. Jonathan Brandt, April 2015.
- **Amazon Research, Seattle**
  *Visual Parsing with Weak Supervision.* Host: Dr. Xiaofeng Ren, March 2015.
- **UC Berkeley Computer Vision Seminar**
  *Visual Parsing with Weak Supervision.* Host: Prof. Alyosha Efros, March 2015.
- **NEC Labs America, Media Analytics Department**
  *Visual Parsing with Weak Supervision.* Host: Dr. Yuanqing Lin, March 2015.
- **CMU VASC Seminar**
  *Visual Parsing with Weak Supervision.* Host: Prof. Martial Hebert, January 2015.
- **University of Toronto Computer Vision Seminar**
  *Efficient Scene Parsing under Various Supervisions.* Host: Prof. Raquel Urtasun, August 2014.
- **SUNw: Scene Understanding Workshop (in conjunction with CVPR 2014)**
  *Tell Me What You See and I will Show You Where It Is.* June 2014.
- **Vision Meets Cognition Workshop (in conjunction with CVPR 2014)**
  *Tell Me What You See and I will Show You Where It Is.* June 2014.

- **MMDS 2014. Workshop on Algorithms for Modern Massive Data Sets**
  *GOSUS: Grassmannian Online Subspace Updates with Structured-sparsity.* June 2014.
- **The Third Annual WARF Discovery Challenge Poster Symposium**
  *GOSUS: Grassmannian Online Subspace Updates with Structured-sparsity.* May 2014.
- **Central South University, China**
  *GOSUS: Grassmannian Online Subspace Updates with Structured-sparsity.* Host: Prof. Yixiong Liang, December 2013.
- **The First Amazon PhD Symposium**
  *GOSUS: Grassmannian Online Subspace Updates with Structured-sparsity.* November 2013.
- **The 5th Annual McPherson Eye Research Institute Vision Science and Visual Arts Poster/Gallery Session**
  *Incorporating User Interaction and Topological Constraints within Contour Completion via Discrete Calculus.* September 2013.
- **TTI-Chicago Computer Vision Seminar**
  *Incorporating User Interaction and Topological Constraints within Contour Completion via Discrete Calculus.* Hosted by Prof. Raquel Urtasun, June 2013.
- **The Second Annual WARF Discovery Challenge Research Symposium**
  *Incorporating User Interaction and Topological Constraints within Contour Completion via Discrete Calculus.* May 2013.
- **UW-Madison Computer Vision Seminar**
  *Incorporating Topological Constraints within Interactive Segmentation and Contour Completion via Discrete Calculus.* May 2013.
- **Machine Learning Summer School (MLSS)**
  *Salient Contour Detection and Completion with Interior/Exterior Constraints.* June 2011.

**Professional Activities**

**Journal Reviewer**:

- IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
- IEEE Transactions on Image Processing (TIP)
- IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)
- IEEE Transactions on Biomedical Engineering (TBME)
- IEEE Transactions on Human-Machine Systems (THMS)
- Journal of Mathematical Imaging and Vision (JMIV)
- Pattern Recognition
- Signal Processing

**Conference Program Committee/Reviewer**:

- Computer Vision and Pattern Recognition (CVPR), 2016 - present
- International Conference on Computer Vision (ICCV), 2015 - present
- European Conference on Computer Vision (ECCV), 2016 - present
- Asian Conference on Computer Vision (ACCV), 2016 - present
- British Machine Vision Conference (BMVC), 2017 - present

- AAAI Conference on Artificial Intelligence (AAAI), 2014 - present
- International Joint Conference on Artificial Intelligence (IJCAI), 2015

**External Conference Reviewer**:

- International Conference on Computer Vision (ICCV), 2013
- Computer Vision and Pattern Recognition (CVPR), 2013, 2014, 2015
- European Conference on Computer Vision (ECCV), 2012

**Skills**

**Programming Languages**:

- Strong skills in C/C++ and MATLAB, with extensive experience in major vision libraries (OpenCV, CUDA, VLFeat, GUROBI, CPLEX, LEDA, CGAL and BOOST)
- Serious project development using Java and C#

**Operating Systems**: Linux (Ubuntu/Fedora/Red Hat/Mac OS X), Windows

**Extracurricular Activities**

- Student Volunteer of International Conference on Machine Learning (ICML), 2015
- Student Volunteer of Computer Vision and Pattern Recognition (CVPR), 2013, 2014
- Organizer of the Computer Vision Reading Group, University of Wisconsin-Madison (January 2013 to May 2013)
- President of the Graduation Union of Computer Science and Technology Department at Nanjing University (2009-2010)
- Captain of the volleyball team of Computer Science and Technology Department at Nanjing University (2007-2009)
- Head of the Organizing Section of the Student Union of Computer Science and Technology Department, Nanjing University (2007-2008)

**Reference**

Available upon request