

## Fanyi Xiao

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RESEARCH INTERESTS	My research interests lie in computer vision. I am also broadly interested in all AI/machine learning topics that could help achieve better visual perception for machines. I have research experiences in object recognition/detection, visual attributes and video data modelling. Currently, I am particularly interested in <i>mining</i> weakly supervised dataset for the purpose of exploring, organizing, and harvesting useful information that could help improve various vision tasks.	
EDUCATION	<b>University of California Davis, Computer Science Dept.</b> , Davis, CA, USA  Ph.D. student, Computer Science <ul style="list-style-type: none"><li>• Advisor: Prof. Yong Jae Lee</li></ul> <b>Carnegie Mellon University, Robotics Institute</b> , Pittsburgh, PA, USA  M.S., Robotics, 2014 <ul style="list-style-type: none"><li>• Advisors: Prof. Martial Hebert and Prof. Yaser Sheikh</li><li>• Thesis: <i>Model Recommendation for Large Scale Exemplar-based Object Detection</i></li></ul> <b>Central South University, Computer Science Department</b> , Changsha, China  B.S., Computer Science, 2012 <ul style="list-style-type: none"><li>• Thesis: <i>Facial Expression Analysis with Active Appearance Model</i></li></ul>	
PUBLICATIONS	<ul style="list-style-type: none"><li>[1] Fanyi Xiao and Yong Jae Lee. Track and segment: An iterative unsupervised approach for video object proposals. In <i>Computer Vision and Pattern Recognition (CVPR)</i>, 2016. (Spotlight presentation).</li><li>[2] Krishna Singh, Fanyi Xiao, and Yong Jae Lee. Track and transfer: Watching videos to simulate strong human supervision for weakly-supervised object detection. In <i>Computer Vision and Pattern Recognition (CVPR)</i>, 2016.</li><li>[3] Fanyi Xiao and Yong Jae Lee. Discovering the spatial extent of relative attributes. In <i>International Conference on Computer Vision (ICCV)</i>, 2015. (Oral presentation).</li><li>[4] Fanyi Xiao and Martial Hebert. Efficient model evaluation with bilinear separation model. In <i>Winter Conference on Applications of Computer Vision (WACV)</i>, 2015.</li><li>[5] Fanyi Xiao, Martial Hebert, Yaser Sheikh, Yair Movshovitz-Attias, Mei Chen, and Denver Dash. Runtime model recommendation for exemplar-based object detection. Technical report, Robotics Institute, Carnegie Mellon University, 2014.</li><li>[6] Zhiding Yu, Chunjing Xu, Deyu Meng, Fanyi Xiao, Wenbo Liu, and Jianzhuang Liu. Transitive distance clustering with k-means duality. In <i>International Conference on Computer Vision and Pattern Recognition (CVPR)</i>, 2014.</li><li>[7] Iljoo Baek, Taylor Stine, Denver Dash, Fanyi Xiao, Yaser Ajmal Sheikh, Yair Movshovitz-Attias, Mei Chen, Martial Hebert, and Takeo Kanade. Physical querying with multi-modal sensing. In <i>Winter Conference on Applications of Computer Vision (WACV)</i>, 2014.</li></ul>	

## AWARDS

- Graduate Fellowship, UC Davis, 2015
- AWS Research Grant (\$10000), Amazon Web Services, Inc., 2015
- Graduate Research Assistantship, CMU, 2013-2014
- Excellent Undergraduate Thesis, CSU, 2012
- Top Grade Scholarship (University-wide highest honor, 0.8%), CSU, 2010
- Sunward Scholarship (0.4%), Sunward Corporation, 2010
- National Scholarship (1%), Ministry of Education of China, 2009
- 1st Grade Scholarship (6%), CSU, 2009

## EXPERIENCE

### Disney Research, Pittsburgh, PA

*Summer Intern*

**June 2016 - Sept 2016**

- Work with Dr. Leonid Sigal on weakly supervised vision-language alignment problem. [In Submission]

### University of California Davis, Davis, CA

*Graduate Student Researcher*

**Sept 2014 - Present**

- Design of a video object proposal algorithm, which takes a video as input, to output proposals that are either object-like or having distinct motion against the background. [CVPR 2016]
- Proposed a weakly supervised object detection algorithm that transfers *tracked object tubes from video*, i.e., exploiting the extra motion information, to improve object localization. Achieved state-of-the-art performance on PASCAL VOC 2007/2010 in the weakly supervised setting. [CVPR 2016]
- Development of a *visual attribute mining* algorithm which takes the dataset with image-level relative attribute annotation as the input to automatically discover visual elements corresponding to semantic attributes. [ICCV 2015]

### Carnegie Mellon University, Pittsburgh, PA

*Graduate Research Assistant*

**Sept 2012 - June 2014**

- Proposed the *Bilinear Separation Model* to approximate the exemplar models with low-rank estimators which are learnt by optimizing a task-specific max-margin formulation. [WACV 2015]
- Development of a framework which uses *collaborative filtering* to recommend object detection models for testing images during runtime to avoid exhaustive search, thus scale up the exemplar-based object detection. [CMU TR 2014]

### Intel Science and Technology Center, Pittsburgh, PA

*Student Researcher*

**Sept 2012 - Aug 2013**

- Development of a multi-modal sensing retailing assistant named “Marvin”. Lead developer of the visual recognition module. [WACV 2014]

### Central South University, Changsha, China

*Undergraduate Senior Thesis*

**Sept 2011 - June 2012**

- Implementation and analysis of a facial expression classification system based on the Active Appearance Model (AAM) representation.

## SKILLS

- Programming: Python, C/C++, Lua, MATLAB, Java
- Misc: Torch7, Caffe, LINUX, L<sup>A</sup>T<sub>E</sub>X

GRADUATE  
COURSES

- CMU: Computer Vision / Machine Learning / Convex Optimization  
Math Fundamentals for Robotics / Learning-based Methods in Vision  
Mechanics of Manipulation
- UC Davis: Visual Recognition

SERVICE

- Reviewer, Winter Conference on Applications of Computer Vision (WACV), 2015-2017