Fanyi Xiao

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Research Interests

I am broadly interested in computer vision and machine learning, with a focus on developing models to learn from videos. At a high level, my research interests can be categorized into three aspects: **(i)** Learning to understand videos. This includes developing algorithms for video recognition/detection/segmentation. **(ii)** Learning video representations with minimal manual supervision (i.e., weakly- and self-supervised learning). **(iii)** Learning across modalities (e.g., image, video and audio).

Education

University of California Davis, Computer Science Dept., Davis, CA, USA

Ph.D. candidate, Computer Science

- Advisor: Prof. Yong Jae Lee

Carnegie Mellon University, Robotics Institute, Pittsburgh, PA, USA

M.S., Robotics, 2014

- Advisors: Prof. Martial Hebert and Prof. Yaser Sheikh
- Thesis: *Model Recommendation for Large Scale Exemplar-based Object Detection*

Central South University, Computer Science Department, Changsha, China

B.S., Computer Science, 2012

- Thesis: *Facial Expression Analysis with Active Appearance Model*

Publications

[1] **Fanyi Xiao**, Yong Jae Lee, Kristen Grauman, Jitendra Malik, and Christoph Feichtenhofer. Audiovisual SlowFast Networks for Video Recognition. 2019. (Under submission).

[2] Daniel Bolya, Chong Zhou, **Fanyi Xiao**, and Yong Jae Lee. YOLACT++: Better Real-time Instance Segmentation. 2019. (Under submission).

[3] **Fanyi Xiao**, Haotian Liu, and Yong Jae Lee. Identity from here, Pose from there: Self-supervised Disentanglement and Generation of Objects using Unlabeled Videos. In *International Conference on Computer Vision (ICCV)*, 2019.

[4] Daniel Bolya, Chong Zhou, **Fanyi Xiao**, and Yong Jae Lee. YOLACT: Real-time Instance Segmentation. In *International Conference on Computer Vision (ICCV)*, 2019. (Oral presentation).

[5] Xitong Yang, Xiaodong Yang, Ming-Yu Liu, **Fanyi Xiao**, Larry S Davis, and Jan Kautz. STEP: Spatio-Temporal Progressive Learning for Video Action Detection. In *Computer Vision and Pattern Recognition (CVPR)*, 2019.

[6] **Fanyi Xiao** and Yong Jae Lee. Video Object Detection with an Aligned Spatial-Temporal Memory. In *European Conference on Computer Vision (ECCV)*, 2018.

[7] Wenjian Hu, Krishna Kumar Singh*, **Fanyi Xiao***, Jinyoung Han, Chen-Nee Chuah, and Yong Jae Lee (* equal contribution). Who Will Share My Image? Predicting the Content Diffusion Path in Online Social Networks. In *ACM International Conference on Web Search and Data Mining (WSDM)*, 2018.

[8] **Fanyi Xiao**, Leonid Sigal, and Yong Jae Lee. Weakly-supervised Visual Grounding of Phrases with Linguistic Structures. In *Computer Vision and Pattern Recognition (CVPR)*, 2017.

[9] **Fanyi Xiao** and Yong Jae Lee. Track and Segment: An Iterative Unsupervised Approach for Video Object Proposals. In *Computer Vision and Pattern Recognition (CVPR)*, 2016. (Spotlight presentation).

[10] Krishna Singh, **Fanyi Xiao**, and Yong Jae Lee. Track and Transfer: Watching Videos to Simulate Strong Human Supervision for Weakly-Supervised Object Detection. In *Computer Vision and Pattern Recognition (CVPR)*, 2016.

[11] **Fanyi Xiao** and Yong Jae Lee. Discovering the Spatial Extent of Relative Attributes. In *International Conference on Computer Vision (ICCV)*, 2015. (Oral presentation).

[12] **Fanyi Xiao** and Martial Hebert. Efficient Model Evaluation with Bilinear Separation Model. In *Winter Conference on Applications of Computer Vision (WACV)*, 2015.

[13] Zhiding Yu, Chunjing Xu, Deyu Meng, **Fanyi Xiao**, Wenbo Liu, and Jianzhuang Liu. Transitive Distance Clustering with K-Means Duality. In *International Conference on Computer Vision and Pattern Recognition (CVPR)*, 2014.

[14] 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 *Winter Conference on Applications of Computer Vision (WACV)*, 2014.

Awards

- Google Cloud Platform Research Grant, 2019
- Best Graduate Researcher Award, CS Dept. of UC Davis, 2018
- Azure Research Award, Microsoft, 2017
- Graduate Fellowship, UC Davis, 2015
- AWS Research Grant, Amazon Web Services, Inc., 2015
- Excellent Undergraduate Thesis, CSU, 2012
- Top Grade Scholarship (University-wide highest honor, 0.8%), CSU, 2010
- Sunward Scholarship (0.4%), Sunward Corporation, 2010
- 1st Grade Scholarship (6%), CSU, 2009
- National Scholarship (1%), Ministry of Education of China, 2009

Experience

Facebook AI Research (FAIR), Menlo Park, CA

Research Intern **June 2019 - Nov 2019**

- An audiovisual video understanding architecture for recognition, detection and multi-modal self-supervised video representation learning. [Under submission]

NVIDIA Research, Santa Clara, CA

Research Intern **July 2017 - Oct 2017**

- An iterative action tube detection method for action detection. [CVPR 2019]

Disney Research, Pittsburgh, PA

Research Intern **June 2016 - Sept 2016**

- Weakly supervised vision-language alignment (i.e., producing segmentation masks for free-form language inputs) by exploiting linguistic structure. [CVPR 2017]

Skills

- Programming: Python, C/C++, Lua, MATLAB, Java
- Misc: PyTorch, Torch7, Caffe, Caffe2, LINUX, LaTeX

Related 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, Computer Vision and Pattern Recognition (CVPR), 2018-20
- Reviewer, European Conference on Computer Vision (ECCV), 2020
- Reviewer, International Conference on Computer Vision (ICCV), 2019
- Program Committee, AAAI Conference on Artificial Intelligence (AAAI), 2019
- Reviewer, Asian Conference on Computer Vision (ACCV), 2018
- Reviewer, Winter Conference on Applications of Computer Vision (WACV), 2015-18