Wei LIU

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Research Interest

Computer Vision, Object Detection, Semantic/Instance Segmentation, Tracking

Machine Learning, Convolutional Neural Network, Recurrent Neural Network

Education

2013.8~Present	PhD Student in Computer Science, Research Assistant The University of North Carolina at Chapel Hill (UNC) Adviser: Prof. Alex Berg Thesis Topic: Localizing Objects Fast and Accurately
2012.9~2013.8	PhD Student in Computer Science, Teaching Assistant Stony Brook University (SBU) Adviser: Prof. Alex Berg Research Topic: Large Scale Object Detection GPA: 3.96/4.0
2011.9~2012.5	PhD Student in Computer Science, Research Assistant The University of North Carolina at Chapel Hill (UNC) Advisor: Prof. Svetlana Lazebnik Research Topic: Object Detection from Video
2005.9~2009.7	B.Sc in Computer Science with honor Nanjing University, China (NJU) Overall GPA: 86.1/100 Major GPA: 87.9/100

Selected Honors

2016.3	Recipient of the 2016 Google PhD Fellowship in Machine Perception.
2015.12	Won travel award for the Doctoral Consortium at ICCV 2015.
2014.8~2015.12	Organizer of ImageNet Large Scale Visual Recognition Challenge 2015 (ILSVRC2015).
2014.11~2015.6	Organizer of Low-Power Image Recognition Challenge 2015 (LPIRC2015).
2014.5~2014.8	1st in classification and detection at ILSVRC2014 with GoogLeNet team.
2013.8~Present	Research Assistantship at UNC Computer Science Department.
2012.9~2013.5	Teaching Assistantship at Stony Brook University Computer Science Department.
2012.9~2013.5	Graduate School Fellowship at Stony Brook University.
2012.9~2013.5	Special Computer Science Department Fellowship at Stony Brook University.
2012.5	Best Poster of Data Mining Course (COMP 722) at UNC.
2011.9~2012.5	Research Assistantship at UNC Computer Science Department.
2009.6	Graduate from Nanjing University with honor
2007.12	1st honor of People's Scholarship

Publications

https://scholar.google.com/citations?user=yFMX138AAAAJ

Wei Liu, Dragomir Anguelov, Dumitru Erhan, Christian Szegedy, Scott Reed, Cheng-Yang Fu, Alexander C. Berg. *SSD: Single Shot MultiBox Detector*. arXiv preprint arXiv:1512.02325, 2015

Wei Liu, Andrew Rabinovich, Alexander C. Berg. *ParseNet: Looking Wider to See Better*. ICLR 2016 workshop paper.

Christian Szegedy, **Wei Liu**, Yangqing Jia, Pierre Sermanet, Scott Reed, Dragomir Anguelov, Dumitru Erhan, Vincent Vanhoucke, and Andrew Rabinovich. *Going deeper with convolutions*. CVPR 2015 (Oral).

Vicente Ordonez, **Wei Liu**, Jia Deng, Yejin Choi, Alexander C. Berg, and Tamara L. Berg. *Predicting Entry-Level Categories*. Submitted to IJCV 2014 (Marr Prize Special Edition).

Song Feng, Sujith Ravi, Ravi Kumar, Polina Kuznetsova, **Wei Liu**, Tamara L. Berg, Alexander C. Berg, and Yejin Choi. *Refer-to-as Relations as Semantic Knowledge*. Accepted to AAAI 2015.

Zhenzhong Lan, Lei Bao, Shoou-I Yu, **Wei Liu** and Alexander Hauptmann. *Double Fusion for Multimedia Event Detection*. MMM 2012.

Wei Liu, Alexander G. Hauptmann. *A Crowdsourcing Approach to Tracker Fusion*. Technique Report, 2011.

Huan Li, Lei Bao, Zan Gao, Arnold Overwijk, **Wei Liu**, Long-fei Zhang, Shoou-I Yu, Ming-yu Chen, Florian Metze and Alexander Hauptmann. *Informedia@TRECVID 2010*. TRECVID Video Retrieval Evaluation Workshop, NIST, 2010.

Yang Liu, Feng Zhou, **Wei Liu**, Yan Liu and Fernando De la Torr. *Rushes Video Summarization via Dynamic Unsupervised Learning*. ACM Multimedia 2010.

Yuan Shi, Zhen-zhong Lan, **Wei Liu** and Wei Bi. *Extending Semi-supervised Learning Methods for Inductive Transfer Learning*. ICDM 2009.

Highlighted Projects

2014.8~Present   **ILSVRC2015**   **Advisor: Alex Berg (UNC)**
I am the main organizer for ImageNet Large Scale Visual Recognition Challenge 2015 (ILSVRC2015). I have created a new task, namely object detection from videos, by collecting about 5000 snippets for 30 categories with bounding boxes fully labeled.

2015.5~2016.3   **Single Shot Detection**   **Advisor: Dragomir Anguelov (Google)**
I redesigned and improved MultiBox (Erhan et.al.) so that it can detect multiple objects from an image in single shot evaluation. During training time, it tries to regress a set of priors (templates) per location to ground truth bounding boxes. It is better than Faster R-CNN, and is 3-8× faster.

2014.8~2015.5   **Semantic Segmentation**   **Advisor: Alex Berg (UNC)**
I designed and trained a neural network which can incorporate global context information seamlessly with local feature for semantic segmentation. It significantly helps improve the performance with negligible additional computation cost.

2014.5~2014.8   **GoogLeNet**   **Advisor: Andrew Rabinovich (Google)**
I was in the GoogLeNet team, who won the ILSVRC2014 classification and detection (with external data) task. I am the main contributor for the detection task. I take the GoogLeNet pre-trained using the classification data and fine-tune it for detection data with selective search boxes and MultiBox by following R-CNN framework.

2012.5~2012.8	**Computer Vision on iPhone** **Advisor: Lukas Marti (Apple Inc.)**
	I worked on a project related to computer vision on iOS, and my project is selected to present to Senior Vice President, Scott Forstall, out of many other interns.
2010.07~2011.7	**Event detection in Internet multimedia** Advisor: **Alex Hauptmann (CMU)**
	I participated in the TRECVID MED 2010 competition, and our team was ranked 3rd out of 7 teams. I focused on extracting different kind of visual features, include SIFT, CSIFT, OpponentSIFT, RGBSIFT, MoSIFT, and GIST; and implemented the soft-assignment encoding method with spatial pyramid.
2010.4~2010.12	**Tracking people** Advisor: **Fernando De la Torr, Alex Hauptmann (CMU)**
	I aimed to improve the tracking performance by combining results from many existing trackers, including particle filter tracker, optical flow tracker, multiple instance learning tracker, etc. I proposed a method to infer the weights for different trackers and the combined bounding box using the EM algorithm.

TA Courses

2013 Spring	CSE 512: Machine Learning, taught by Prof. Leman Akoglu at Stony Brook.
2012 Fall	CSE 595: Words & Picture, taught by Prof. Tamara Berg at Stony Brook.

Skills

Proficient	C/C++, Python, Matlab
Experienced	Bash Script, Run jobs on cluster, PHP, Javascript, MySQL, OpenCV, LaTeX 2_ε, Amazon EC2
Know	Hadoop, Java, C#

Reference

Prof. Alex Berg, Department of Computer Science, The University of North Carolina at Chapel Hill, Email: aberg@cs.unc.edu

Dr. Dragomir Anguelov, Senior Director of Perception at stealth-mode startup, Email: dragomir@gmail.com

Dr. Andrew Rabinovich, Principal Engineer at Magic Leap Inc., Email: amrabino@gmail.com

Dr. Lukas Marti, Core Location Group at WiSE Team of iOS at Apple Inc., Email: lmarti@apple.com

Prof. Svetlana Lazebnik, Department of Computer Science, University of Illinois at Urbana-Champaign, Email: slazebni@illinois.edu

Prof. Alexander G. Hauptmann, Language Technologies Institute, Carnegie Mellon University, Email: alex@cs.cmu.edu

Prof. Fernando De la Torre, Robotics Institute, Carnegie Mellon University, Email: ftorre@cs.cmu.edu