Abhinav Shrivastava

Ph.D. Candidate, Robotics Institute
Carnegie Mellon University
5000 Forbes Avenue, Pittsburgh, PA 15213

www.abhinavsh.info
ashrivas@cs.cmu.edu
abhi2610@gmail.com
(412) 478-7266

Education

Ph.D. Candidate, Robotics, **Carnegie Mellon University** 08/2012 - till date
Advisor: Abhinav Gupta
Thesis: Discovering and Leveraging Visual Structure for Large-scale Recognition
Thesis Committee: Abhinav Gupta, Martial Hebert, Deva Ramanan, Alexei A. Efros, Jitendra Malik
Awarded Microsoft Research Ph.D. Fellowship (2014-16)

M.S., Robotics, **Carnegie Mellon University** 08/2010 - 12/2011
Advisors: Alexei A. Efros, Martial Hebert
Thesis: Data-driven Visual Similarity for Image Matching

B.Tech., Computer Science & Engineering, **Jaypee Institute of Information Technology** (JIIT) 08/2006 - 05/2010
Advisor: Sanjay Goel
Thesis: A Hypermedia Development Tool for Movie-based Comic Strip Rendering
Awarded Vice Chancellor Gold Medal

Research Experience

Research Assistant, **Google Research** 07/2016 - till date
Collaborators: Abhinav Gupta, Rahul Sukthankar, Jitendra Malik
Topics: Top-down mechanisms for object recognition

Research Intern, **Microsoft Research** 05 - 08/2015
Supervisors: Ross Girshick, Larry Zitnick; both now at Facebook AI Research
Topics: Hard-example mining for object detectors, semi-supervised learning

Research Intern, **Google Research** 05 - 08/2013
Supervisors: Mark Segal, Rahul Sukthankar, Thomas Leung
Topics: Incorporating geometry in deep neural networks

Research Intern, **Microsoft Research** 05 - 08/2012
Supervisors: Sanjeev Mehrotra and Jin Li
Topic: Large-scale indexing and nearest-neighbor search for high-dimensional data points

Research Associate III, **Carnegie Mellon University** 01 - 05/2011

Teaching Experience & Service

Teaching Assistant:

Geometry-based Methods in Vision (16-822), CMU. (Instructor: Martial Hebert) Spring 2013
Data Structures, JIIT 2008-09
Microprocessors and Controllers, JIIT 2008-09

Department Service:

Master's Admissions Committee, Robotics Institute, CMU 2015-16
Master's Thesis Committee, CMU: Shreyansh Daftry, Krishna Kumar Singh, Tanmay Batra 2014 - till date
Ph.D. Qualifier Committee, CMU: Aayush Bansal, Ishan Misra, Xiaolong Wang 2015 - till date

Community Service:

Conference Area Chair: CVPR'18
Conference Reviewer: CVPR'12-17, NIPS'12-15, ECCV'12-16, ICCV'11-17, ACCV'12-14
SIGGRAPH'14, AAAI'15, 3DV'14-15
Journal Reviewer: IJCV, TPAMI, CVIU, TKDE

Publications

Manuscripts under review

[1] **A. Shrivastava**, R. Sukthankar, J. Malik and A. Gupta
Beyond Skip Connections: Top-Down Modulation for Object Detection
Under review at: *IEEE International Conference on Computer Vision (ICCV), 2017*

[2] C. Sun, **A. Shrivastava**, S. Singh, and A. Gupta
Revisiting Unreasonable Effectiveness of Data in Deep Learning Era
Under review at: *IEEE International Conference on Computer Vision (ICCV), 2017*

Peer-Reviewed Journal and Conference Publications

[3] X. Wang, **A. Shrivastava**, and A. Gupta
A-Fast-RCNN: Hard Positive Generation via Adversary for Object Detection
In: *IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2017*

[4] **A. Shrivastava** and A. Gupta
Contextual Priming and Feedback for Faster R-CNN
In: *European Conference on Computer Vision (ECCV), 2016*

[5] **A. Shrivastava** and A. Gupta
Training Region-based Object Detectors using Online Hard Example Mining
In: *IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2016*
Oral Presentation (3.9% oral acceptance rate) (4^{th} place in MS COCO Detection Challenge)

[6] I. Misra, **A. Shrivastava**, A.Gupta and M. Hebert
Cross-stitch Networks for Multi-task Learning
In: *IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2016*
Spotlight Presentation (9.7% spotlight acceptance rate)

[7] I. Misra, **A. Shrivastava**, A.Gupta and M. Hebert
Watch and Learn: Semi-Supervised Learning of Object Detectors from Videos
In: *IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2015*

[8] E. M. Aminoff, M. Toneva, **A. Shrivastava**, X. Chen, I. Misra, A. Gupta and M. J. Tarr
Applying Artificial Vision Models to Human Scene Understanding
In: *Frontiers in Computational Neuroscience, 2015*

[9] X. Chen, **A. Shrivastava** and A. Gupta
Object Discovery and Segmentation via Discriminative Visual Subcategories
In: *IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2014*

[10] I. Misra, **A. Shrivastava**, A.Gupta and M. Hebert
Data-driven Exemplar Model Selection
In: *IEEE Winter Conference on Applications of Computer Vision, 2014*
Oral Presentation, **Best Student Paper Award**

[11] **A. Shrivastava** and A. Gupta
Building Parts-based Object Detectors via 3D Geometry
In: *IEEE International Conference on Computer Vision (ICCV), 2013*

[12] X. Chen, **A. Shrivastava** and A. Gupta
NEIL: Extracting Visual Knowledge from Web Data
In: *IEEE International Conference on Computer Vision (ICCV), 2013*
Oral Presentation (2.52% oral acceptance rate), http://neil-kb.com
Popular Press: CNN (Top-10 Ideas 2013), Newsweek, Forbes, Yahoo! News, BBC News, AP, Business Insider, Slashdot, Engadget, Engadet, Techradar.

[13] **A. Shrivastava**, S. Singh and A. Gupta
Constrained Semi-Supervised Learning using Attributes and Comparative Attributes
In: *European Conference on Computer Vision (ECCV), 2012*
Oral Presentation (2.8% oral acceptance rate)

[14] **A. Shrivastava**, T. Malisiewicz, A. Gupta and A. Efros
Data-driven Visual Similarity for Cross-domain Image Matching
In: *ACM Transactions of Graphics, (SIGGRAPH Asia), 2011*
Oral Presentation (18% acceptance rate)
Popular Press: *TechCrunch*, *Y! Hacker News*, *Computing Community Consortium (Research Highlight of the week)*, *Science Daily*

Invited Papers and Posters

[15] **A. Shrivastava**, A. Gupta and A. A. Efros
Real-time Household Object Detection from First-person's view using Exemplar-SVMs
In: *IEEE Workshop on Egocentric Vision at CVPR, 2012* (Extended Abstract & Poster)

[16] T. Malisiewicz, **A. Shrivastava**, A. Gupta and A. A. Efros
Exemplar-SVMs for Visual Object Detection, Label Transfer and Image Retrieval
In: *International Conference on Machine Learning (ICML), 2012*
(Invited Applications Talk + Extended Abstract)

Technical Reports

[17] T. Zhou, **A. Shrivastava**, G. Obozinski, A. Gupta and A. A. Efros
Measuring and Increasing the capacity of Natural HOG Statistics
Technical Report, Carnegie Mellon University

[18] I. Misra, **A. Shrivastava** and M. Hebert
HOG and Spatial Convolution on SIMD Architecture
Technical Report, Carnegie Mellon University

Selected Talks, Seminars & Lectures

The Small and the Rare: the Twin Menace of Visual Recognition
Colloquium: University of Maryland, College Park, Mar. 2017
GRASP Seminar: University of Pennsylvania, Feb. 2017

Training Region-based Object Detectors with Online Hard Example Mining
Conference: CVPR, Jun. 2016, video

NEIL: Extracting Visual Knowledge from Web Data
CMU VASC Seminar, Nov. 2013
Conference: ICCV, Dec. 2013, video
Guest Lecture (Course): Visual Recognition, University of Pittsburgh, Feb 2015

Constrained Semi-Supervised Learning using Attributes and Comparative Attributes
CMU VASC Seminar, Sep. 2012
Conference: ECCV, Oct. 2012, video
Guest Lecture (Course): Visual Recognition, University of Pittsburgh, Feb. 2015

Data-driven Visual Similarity for Cross-domain Image Matching
Conference: SIGGRAPH Asia, Dec. 2011
Guest Lecture (Course): Visual Recognition, University of Pittsburgh, Feb. 2015

Overview of Object Detection with historical context
Course: Learning Based Methods in Vision, CMU, Oct. 2013

Semantic vs Visual Subcategories in Computer Vision and Neuroscience
Course: The Visual World as seen by the Neurons and Machines, Mar. 2014

Building Part-based Object Detectors via 3D Geometry
CMU VASC Seminar, Nov. 2013

Tutorial on Caffe toolbox
Course: Big Data Approaches, CMU, Sep. 2014

Vanishing Point Estimation, and applications to Scene-layout Estimation
Guest Lecture (Course): Geometry-based Methods in Vision, CMU, 2013-16

Indexing in High-dimensional spaces (for large-scale nearest neighbor search)
Industry: Bing, Microsoft, Aug. 2012
Tutorial, CMU, Sep. 2012

Tutorial and Workshop on Automated Robotics (Micro-mouse)
Course: Microprocessors and Controllers, JIIT, 2008-09
Guest Lecture: Computer Society of India (CSI) Week, IGIT, IP University (India), 2008
Guest Lecture: IEEE Week, NIEC (India), 2008
Workshop: IEEE Winter Academic Program, JIIT, 2008

References

Available on request.