

1A) Alexander C. Berg

(Dec. 11, 2015)

Computer Science Department
UNC Chapel Hill
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(415) 712-4812

1B) EDUCATION Ph.D. “Shape Matching and Object Recognition.”
December 2005, Computer Science, U.C. Berkeley
M.A. Aug. 1995, Mathematics, Johns Hopkins University
B.A. May 1994, Mathematics, Johns Hopkins University

1C) PROFESSIONAL EXPERIENCE *Assistant Professor (Tenure Track)* **University of North Carolina**
Department of Computer Science **Chapel Hill, NC, USA**
July 2013 – present
Performing research on a variety of subjects related to computer vision, advising students, and teaching.

Assistant Professor (Tenure Track) **Stony Brook University**
Department of Computer Science **Stony Brook, NY, USA**
Sept. 2010 – June 2013
Performing research on a variety of subjects related to computer vision, advising students, and teaching.

Consultant **Microsoft Research**
Microsoft Research **NYC & New England**
Various 2011
Applying research on large scale machine learning for computer vision to industrial challenges.

Research Scientist **Columbia University**
Computer Science Department **New York, NY, USA**
Sept. 2008 – Aug. 2010
Advancing recognition for computer vision including: high-level describable visual attributes for face identification and general object recognition; efficient learning algorithms for classification and detection.

Consultant **KBVT, LLC**
San Diego, CA, USA
Dec. 2008 – Aug. 2010
Consulting on face alignment algorithms.

Research Scientist **Yahoo!**
Yahoo! Research **Berkeley, CA, USA**

Feb. 2007 – May 2008

Exploring what computer vision can do for commercial search applications, protecting copyrighted content, and improving advertising revenues.

Visiting Scholar
EECS Department

University of California, Berkeley
Berkeley, CA, USA
Feb. 2007 – May 2008

Collaborating with the computer vision group at UC Berkeley and working with groups in Psychology and Environmental Science on applications.

Postdoctoral Scholar
EECS Department

University of California, Berkeley
Berkeley, CA, USA
2006–Feb. 2007

Attacking the challenge of visual recognition at all levels.

Graduate Research Assistant
EECS Department

University of California, Berkeley
Berkeley, CA, USA
2001–2005

While a graduate student in the EECS department, I was a research assistant working on various problems in visual recognition including: activity recognition, object recognition, feature descriptors, video based motion synthesis, face recognition, etc.

Graduate Student Instructor
EECS Department

University of California, Berkeley
Berkeley, CA, USA
1997–2000

While a graduate student in the EECS department, I was a TA for graduate and undergraduate courses in spline based modeling, computer graphics, algorithms, randomized algorithms, and discrete mathematics.

Intern

Sun Microsystems
Menlo Park, CA
Summer 1998

Implemented hand tracking based user interface using Sun Microsystems optimized multimedia libraries.

Senior Consultant

Booz, Allen and Hamilton
Sunnyvale, CA, USA
1996–1997

Full-time employee working on distributed systems for multiple hypothesis tracking and general algorithms related consulting. Continued as a consultant.

Graduate Student Instructor
Mathematics Department

University of California, Berkeley
Berkeley, CA, USA
1995–1996

While a PhD student in Mathematics I was a TA for undergraduate linear alge-

bra and discrete math courses.

Teacher
Montgomery Blair H.S. Magnet
Program

Montgomery County Schools
Silver Spring, MD, USA

1994–1995

During a “year off” following my MA, I taught discrete mathematics, computer graphics, and software design, at the Montgomery Blair High School Magnet Program for Math, Science, and Computer Science (my alma mater).

1D) HONORS Marr Prize (Best Paper, International Conference on Computer Vision), December 2013
NSF Career Award, 2014
Google Faculty Award, 2014

1E)
PUBLICATIONS

Books and Chapters:

“Shape Matching and Object Recognition”

A.C. Berg, J. Malik,

A book chapter in: Toward Category Level Object Recognition.

Ponce, Jean, et al., eds. Springer, 2007. pp. 483-507.

Refereed Papers and Articles:

“Visual Madlibs: Fill in the blank Description Generation and Question Answering”

Licheng Yu, Eunbyung Park, Alexander C. Berg, Tamara L. Berg.

IEEE International conference on computer vision (ICCV) 2015. pp. 2461-2469.

“Where to Buy It: Matching Street Clothing Photos in Online Shops”

Hadi Kiapour, Xufeng Han, Svetlana Lazebnik, Alexander C. Berg, Tamara L. Berg, Alexander C. Berg, Tamara L. Berg.

IEEE International conference on computer vision (ICCV) 2015. (Oral presentation and paper) pp. 3343-3351

“Efficient Two-View Geometry Classification”

Johannes L. Schönberger, Alexander C. Berg, Johannes L. Schonberger, Alexander C. Berg, Jan-Michael Frahm

German Conference on Pattern Recognition (GCPR) 2015. Best paper honor-

able mention (top 3 papers). pp. 1-12

“Large Scale Retrieval and Generation of Image Descriptions”

Vicente Ordonez, Xufeng Han, Polina Kuznetsova, Girish Kulkarni, Margaret Michtell, Kota Yamaguchi, Karl Stratos, Amit Goyal, Jesse Dodge, Alyssa Mensch, Hal Daume III, Alexander C. Berg, Yejin Choi, Tamara L. Berg.
International Journal of Computer Vision (IJCV) 2015. (“online first” July 8 2015.) pp. 1-14.

“ImageNet Large Scale Visual Recognition Challenge”

Olga Russakovsky, Jia Deng, Hao Su, Jonathan Krause, Sanjeev Satheesh, Zhiheng Huang, Andrej Karthapy, Aditya Khosla, Michael Bernstein, Alexander C. Berg, Li Fei-Fei
International Journal of Computer Vision (IJCV) 2015. Vol. 115, No. 3, pp. 211-252.

“MatchNet: Unifying Feature and Metric Learning for Patch-based Matching”

Xufeng Han, Thomas Leung, Yangqing Jia, Rahul Sukthankar, Alexander C. Berg
IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2015.
pp. 3279-3286

“PAIGE: PAirwise Image Geometry Encoding for Improved Efficiency in Structure-from-Motion”

Johannes L. Schönberger, Alexander C. Berg, Jan-Michael Frahm
IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2015.
pp. 1009-1018

“Predicting Entry-Level Categories”,

Vicente Ordonez, Wei Liu, Jia Deng, Yejin Choi, Alexander C. Berg, Tamara L. Berg.
International Journal of Computer Vision - Marr Prize Special Issue (IJCV),
Vol 115, Issue 1, 2015. pp29-43.

“Runway to Realway: Visual Analysis of Fashion”,

Sirion Vittayakorn, Kota Yamaguchi, Alexander C. Berg, Tamara L. Berg,
Winter Conference on Applications of Computer Vision (WACV) 2015 (Waikoloa).

“Refer-to-as Relations as Semantic Knowledge”,

Song Feng, Sujith Ravi, Ravi Kumar, Polina Kuznetsova, Wei Liu, Alexander C. Berg, Tamara L. Berg, Yejin Choi,

AAAI Conference on Artificial Intelligence (AAAI), 2015 (Austin).

“Hipster Wars: Discovering Elements of Fashion Styles”

M. Hadi Kiapour, Kota Yamaguchi, Alexander C. Berg, Tamara L. Berg
European Conference on Computer Vision (ECCV) 2014. pp. 472-488.

“Scalable Multi-Label Annotation”

Jia Deng, Olga Russakovsky, Jonathan Krause, Michael Bernstein, Alexander C. Berg, Li Fei-Fei
ACM SIGCHI Conference (CHI) 2014 (oral presentation and paper). pp. 3099-3102

“Materials Discovery: Fine-Grained Classification of X-ray Scattering Images”

Hadi Kiapour, Kevin G. Yager, Alexander C. Berg, Tamara L. Berg
Winter Conference on Applications of Vision (WACV) 2014. pp. 933-940

“Modeling Guidance and Recognition in Categorical Search: Bridging Human and Computer Object Detection”

Gregory Zelinsky, Yifan Peng, Alexander Berg, Dimitris Samaras
Journal of Vision, Volume 13, Number 3, 2013. 1 page.

“From large scale image categorization to entry-Level categories”

Vicente Ordonez, Jia Deng, Yejin Choi, Alexander C. Berg, Tamara L. Berg
IEEE International Conference on Computer Vision (ICCV) 2013. pp. 2768-2775 (oral presentation and paper, awarded **Marr Prize**).

“Detecting avocados to zucchinis: what have we done, and where are we going?”

Olga Russakovsky, Jia Deng, Zhiheng Huang, Alexander C. Berg, Li Fei-Fei
IEEE International Conference on Computer Vision (ICCV) 2013. pp. 2064-2071.

“Multiple-voxel pattern analysis of selective representation of visual working memory”

Xufeng Han, Alexander C. Berg, Hwamee Oh, Dimitris Samaras, Hoi-Chung Leung
NeuroImage, Vol 27, June 27, pages 8-15, 2013.

“BabyTalk: Understanding and Generating Simple Image Descriptions”

G. Kulkarni, V. Premraj, V. Ordonez, S. Dhar, S. Li, Y. Choi, A. C. Berg, T. L. Berg

IEEE Transactions on Pattern Analysis and Machine Intelligence (IEEE TPAMI) 2013.

“Efficient Classification for Additive Kernel SVMs”

S. Maji, A.C. Berg, J. Malik

IEEE Transactions on Pattern Analysis and Machine Intelligence (IEEE TPAMI), January 2013, v35, I1, pp. 66-77.

“Collective Generation of Natural Image Descriptions”

P. Kuznetsova, V. Ordonez, A.C. Berg, T.L. Berg Y. Choi

ACL '12 (Jeu) Proceedings of the 50th Annual Meeting of the Association for Computational Linguistics: Long Papers - Volume 1. Pages 359-368.

“Detecting Visual Text”

J. Dodge, A. Goyal, X. Han, A. Mensch, M. Mitchell, K. Stratos, K. Yamaguchi, A.C. Berg, T.L. Berg, Y. Choi, H. Daum III

NAACL 2012 (oral presentation and paper). pp. 762–772

“DCMSVM: Distributed Parallel Training For Single-Machine Multiclass Classifiers”

X. Han, A.C. Berg

IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2012. pp. 3554-3561.

“Hedging Your Bets: Optimizing Accuracy-Specificity Trade-offs in Large Scale Visual Recognition”

J. Deng, J. Krause, A.C. Berg, L. Fei-Fei

IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2012. pp. 3450-3457.

“Understanding and Predicting Importance in Images”

A.C. Berg, T.L. Berg, H. Daum III, J. Dodge, A. Goyal, X. Han, A. Mensch, M. Mitchell, A. Sood, K. Stratos, K. Yamaguchi

IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2012. pp. 3562-3569.

“Midge: Generating Image Descriptions From Computer Vision Detections”

M. Mitchell, J. Dodge, A. Goyal, K. Yamaguchi, K. Stratos, X. Han, A. Mensch, A.C. Berg, T.L. Berg, H. Daum III

EACL 2012. pp. 747-756.

“Fast and Balanced: Efficient Label Tree Learning for Large Scale Object Recognition”

J. Deng, A.C. Berg, L. Fei-Fei

Neural Information Processing Systems (NIPS) 2011. pp. 567-575

“Composing Simple Image Descriptions using Web-scale N-grams”

S. Li, G. Kulkarni, Y. Choi, A.C. Berg, T.L. Berg

Computational Natural Language Learning (CoNLL), 2011. pp. 220-228

“Baby Talk: Understanding and Generating Image Descriptions”

G. Kulkarni, V. Premraj, S. Dhar, S. Li, Y. Choi, A.C. Berg, T.L. Berg

IEEE Computer Vision and Pattern Recognition, Colorado Springs 2011. (oral presentation and paper) pp. 1601-1608.

“Hierarchical Semantic Indexing for Large Scale Image Retrieval”

J. Deng, A.C. Berg, L. Fei-Fei

IEEE Computer Vision and Pattern Recognition, Colorado Springs 2011. pp. 785-792.

“Who are you with and where are you going?”

K. Yamaguchi, A.C. Berg, T.L. Berg, and L. Ortiz

IEEE Computer Vision and Pattern Recognition, Colorado Springs 2011. pp. 1345-1352.

“Using Digital Photography to Examine Grazing in Montane Meadows”

S. McIlroy, B. Allen-Diaz, A.C. Berg

Journal of Rangeland Ecology & Management. March 2011. pp. 187-195.

“Describable Visual Attributes for Face Verification and Image Search”

N. Kumar, A.C. Berg, P.N. Belhumeur, S.K. Nayar

IEEE Transactions on Pattern Analysis and Machine Intelligence, Oct. 2011. pp. 1962-1977.

“What does classifying more than 10,000 image categories tell us?”

J. Deng, A.C. Berg, K. Li, L. Fei-Fei

European Conference on Computer Vision, Crete 2010. pp. 71-84.

“Automatic Attribute Discovery and Characterization”

T.L. Berg, A.C. Berg, J. Shih

European Conference on Computer Vision, Crete 2010. pp. 663-676.

“Max-Margin Additive Classifiers for Object Detection”

S. Maji, A.C. Berg

IEEE International Conference on Computer Vision, Kyoto 2009. (oral presentation and paper) pp. 40-47.

“Attribute and Simile Classifiers for Face Verification”

N. Kumar, A.C. Berg, P.N. Belhumeur, S.K. Nayar

IEEE International Conference on Computer Vision, Kyoto 2009. (oral presentation and paper) pp. 365-372.

“Finding Iconic Images”

T.L. Berg, A.C. Berg

Second Internet Vision Workshop at the IEEE Conference on Computer Vision and Pattern Recognition, Miami 2009. (oral presentation and paper) pp. 1-8.

“EClassification using Intersection Kernel Support Vector Machines is Efficient”

S. Maji, A.C. Berg, J. Malik

IEEE Computer Vision and Pattern Recognition (CVPR) 2008. pp. 1-8.

“Parsing Images of Architectural Scenes”

A.C. Berg, F. Grabler, J. Malik

IEEE International Conference on Computer Vision (ICCV) 2007. pp. 1-8.

“SVM-KNN: Discriminative Nearest Neighbor Classification for Visual Category Recognition”

H. Zhang, A.C. Berg, M. Maire, J. Malik

IEEE Computer Vision and Pattern Recognition (CVPR) 2006. pp. 2126-2136.

“Recovering Human Body Configurations using Pairwise Constraints Between Parts”

X. Ren, A.C. Berg, J. Malik,

IEEE International Conference on Computer Vision (ICCV) 2005. pp. 824-831.

“Shape Matching and Object Recognition using Low Distortion Correspondence”

A.C. Berg, T.L. Berg, J. Malik,

IEEE Computer Vision and Pattern Recognition (CVPR) 2005. (oral presentation and paper) pp. 26-33.

“Who’s in the Picture”

T. L. Berg, A. C. Berg, J. Edwards, D. A. Forsyth

Neural Information Processing Systems (NIPS) 2004. pp. 1-8.

“Names and Faces in the News”

T. L. Berg, A. C. Berg, J. Edwards, M. Maire, R. White, Y. W. Teh, E. Learned-Miller, D. A. Forsyth
IEEE Computer Vision and Pattern Recognition (CVPR) 2004. pp. 848-854.

“Recognizing Action at a Distance”

A. Efros, A.C. Berg, G.P. Mori, J. Malik,
International Conference on Computer Vision (ICCV) 2003. (oral presentation and paper) pp. 726-733.

“Geometric Blur for Template Matching”

A.C. Berg, J. Malik,
IEEE Computer Vision and Pattern Recognition (CVPR) 2001. pp. 1.607-614.

“Approximating Aggregate Queries about Web Pages via Random Walks”

Z. Bar-Yossef, A.C. Berg, S. Chien, J. Fakcharoenphol, D. Weitz
Very Large Databases, Cairo 2000. (oral presentation and paper) pp. 535-544.

Refereed paper, in press:

“Learning to Name Objects”

Vicente Ordonez, Wei Liu, Jia Deng, Yejin Choi, Alexander C. Berg, Tamara L. Berg
Accepted, to appear in Communications of the ACM (CACM) 2016. 8 pages.

1F) TEACHING

Spring 2013 (Stony Brook University)
+ 378/525 Introduction to Robotics with 18 undergrad and 10 graduate.

Fall 2013 (UNC)

+ 790-134 (Big Data) with 29 students
+ 991 (MS Research) with 2 students
+ 994 (PhD Research) with 2 students

Spring 2014 (UNC)

+ 776 (Computer Vision) with 6 students
+ 991 (MS Research) with 1 students
+ 992 (MS Report/Thesis work) with 2 student

+ 994 (PhD Research) with 5 students

Fall 2014 (UNC)

+ 590-134 (Computational Photography, now 572) with 7 ugrad, 9 grad

+ 991 (MS Research) with 2 students

+ 992 (MS Report/Thesis work) with 1 student

+ 994 (PhD Research) with 2 students

Spring 2015 (UNC)

+ 790-134 (Machine Learning with Discriminative Models) with 28 students

+ 790-062 (Co-Taught, Automotive Cyber-Physical Systems) with 15 students

+ 991 (MS Research) with 4 students

+ 992 (MS Project/Thesis) with 2 students

+ 994 (PhD Research) with 3 students

Fall 2015 (UNC, Pre-tenure research assignment)

+ 991 (MS Research) with 3 students

+ 992 (MS Report/Thesis work) with 1 student

+ 994 (PhD Research) with 3 students

Currently I am the advisor for 6 PhD Students:

+ Xufeng Han (Defense passed, PhD expected Jan. 2016, “Learning with more data and better models for visual similarity and differentiation”)

+ Wei Liu (PhD expected Dec. 2016)

+ Eunbyung Park (PhD expected 2018)

+ Cheng-Yang Fu (PhD expected 2019)

+ Philip Ammirato (PhD expected 2019)

+ Patrick Poirson (PhD expected 2020)

Supervised MS Projects:

+ Lu Chen “Scene Specific Pedestrian Detection” Spring 2015.

+ Dongye Meng “A Survey of Corpus-based Supervised and Semi-supervised Word Sense Disambiguation” Fall 2014.

+ Shubham Gupta “Review: Support Vector Machines” Fall 2014.

I am or have been a committee member for several other PhD students at UNC:

+ Joseph Tighe (advisor Svetlana Lazebnik) defense and thesis, Fall 2013.

+ Yunchao Gong (advisor Svetlana Lazebnik) proposal, qual, defense and thesis, Spring 2014.

- + Teryl Taylor (advisor Fabian Monroe) proposal, qual, Spring 2014.
- + Jacob batel (advisor Prasun Dewan) proposal, qual, defense and thesis, Spring 2014, Fall 2014.
- + Vicente Ordonez (advisor Tamara Berg) proposal, qual, defense and thesis, Fall 2014, Spring 2015.
- + Hadi Kiapour (advisor Tamara Berg) proposal, qual, defense and thesis, Spring 2015, Fall 2015.

1G) GRANTS

NSF CAREER grant (#1452851, 2015-2019, Direct Amt. \$371,341 “CAREER: Situated Recognition: Learning to understand our local visual environment”). Role: Sole PI. Effort 8.3%.

NSF Cyber-Physical Systems grant (#1446631, 2015-2017, Direct Amt. \$705,221 “CPS: Synergy: Doing More With Less: Cost-Effective Infrastructure for Automotive Vision Capabilities”). Role: Co PI. Effort 4.16%.

NSF Supplement to CPS #1446631 on behalf of Air Force Research Lab (Direct Amt. \$24,874 role: Co PI, Effort 0%).

NSF National Robotics Initiative grant (#1526367, 2015-2018, Direct Amt. \$186,945 “NRI: Collaborative Research: Task Dependent Semantic Modeling for Robot Perception”). Role: Sole UNC PI. Effort 4.16%.

NSF Exploiting Parallelism and Scalability grant (#1533771, 2015-2019, Direct Amt. \$226,758 “XPS: FULL: DSD: Collaborative Research: FPGA Cloud Platform for Deep Learning, Applications in Computer Vision”). Role: Sole UNC PI. Effort 4.16%.

Google Faculty Award Gift \$48,667 (all direct) Aug 2014-.

Facebook Faculty Award Gift \$25,000 (all direct) May 2014-.

1H) SERVICE

Area Chair for CVPR 2016.
 Area Chair for ICCV 2015.
 Co-Chair for Workshops at CVPR 2015.
 Area Chair ECCV 2014.

Co-Organizer for the Low-Power Image Recognition Competition 2015 (held at the Design Automation Conference) Co-Organizer of ImageNet Large Scale Visual Recognition Challenge workshop at ECCV 2010, ICCV 2011, ECCV 2012, ICCV 2013, ECCV 2014, ICCV 2015, ...

Co-Organizer of the BigVision workshop at CVPR 2013, CVPR 2014.

Co-Organizer of Webscale Vision and Social Media workshop at ECCV 2012, CVPR 2014.

Area Chair CVPR 2013.

Area Chair CVPR 2012.

Co-Organizer of 6+2 week summer workshop on visually descriptive language at JHU-CLSP Summer 2011.

Co-Organizer of the Large Scale Learning for Computer Vision Workshop 2011.

Co-Organizer of the ImageNet Large Scale Visual Recognition Challenge 2010-present.

Program committee for CVPR 2006, 2007, 2008, 2009, 2010, 2011 & 2014.

Program committee for ECCV 2010.

Program committee for BMVC 2008.

Program committee for ICCV 2009, 2011, 2013

Award winning reviewer on the program committee for ICCV 2007.

Program committee for 1st Internet Vision Workshop 2008.

Reviewer for SIGGRAPH, NIPS, JMLR, IJCV, PAMI.

NSF Panel Member CISE-IIS 2008, CISE-CCF 2013, CISE-IIS 2015

UNC Computer Science Department Admissions PhD Sp. 2014, Sp. 2015

UNC Computer Science Department Faculty Search Committee Fa. 2015, Sp. 2016

SBU Computer Science Department Admissions PhD & MS, Fa. 2010, Sp.2011, Fa 2011, Sp 2012, Fa. 2012, Sp. 2013.