Tamara L. Berg

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Google Scholar page

Research

My research interests lie at the boundary of computer vision and natural language processing, specifically focused on understanding the connections between these two related modalities. Today billions of images with associated text are available on web pages, captioned photographs, video with speech or closed captioning, and many others. In order to organize, search, and exploit these enormous collections we work on developing methods that combine information from both the visual and textual sources effectively. Past and current projects include: automatically identifying people in news photographs, classifying images from the web, selecting aesthetically pleasing or interesting images, generating natural language descriptions for images, visual social media analysis, and recognizing clothing and style.

Bio

I received my B.S. in Mathematics and Computer Science from the University of Wisconsin, Madison in 2001. I then completed a PhD in Computer Science from the University of California, Berkeley in 2007 under the advisory of Professor David Forsyth as a member of the Berkeley Computer Vision Group. Afterward, I spent 1 year as a research scientist at Yahoo! Research. From 2008-2013 I was an Assistant Professor in the Computer Science department at Stony Brook University and core member of the consortium for Digital Art, Culture, and Technology (cDACT). I joined the computer science department at the University of North Carolina Chapel Hill (UNC) in Fall 2013 and am currently a tenured Associate Professor. I am the recipient of an NSF Career award, 2 google faculty awards, the 2013 Marr Prize, and the 2016 UNC Hettleman Award.

Teaching

Spring 2016, Fall 2013, Spring 2012, Fall 2009 - CS 790-133 Recognizing People, Objects, and Actions
Fall 2015, Spring 2014 - CS 560 Artificial Intelligence
Spring 2015 - CS 790-133 Language and Vision
Fall 2012, Spring 2011 - CSE 595 Words and Pictures
Spring 2013/2012/2011/2010/2009 - CSE/ISE 364 Advanced Multimedia
Spring 2013, Fall 2011 - CSE 590 Computational Photography
Fall 2008 - CSE 690 Internet Vision

Students

Yipin Zhou (PhD, UNC)
Licheng Yu (PhD, UNC)
Adam Aji (BS/MS, UNC)

Publications

- Hierarchically-Attentive RNN for Album Summarization and Storytelling
  Licheng Yu, Mohit Bansal, Tamara L. Berg,
  Empirical Methods in Natural Language Processing (EMNLP), 2017.

- A Joint Speaker-Listener-Reinforcer Model for Referring Expressions
  Licheng Yu, Hao Tan, Mohit Bansal, Tamara L. Berg,
  IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2017.

- Physics-Inspired Garment Recovery from a Single-View Image
  Shan Yang, Tanya Ambert, Zherong Pan, Ke Wang, Licheng Yu, Tamara L. Berg, Ming C. Lin,
  ACM Transactions on Graphics (TOG), 2017.
  Video

- When Was That Made?
  Sirion Vittayakorn, Alexander C. Berg, Tamara L. Berg,
  Winter Conference on Applications of Computer Vision (WACV), 2017.

- Modeling Context in Referring Expressions
  Licheng Yu, Patrick Poirson, Shan Yang, Alexander C. Berg, Tamara L. Berg,

European Conference on Computer Vision (ECCV), 2016.
Dataset

- Learning Temporal Transformations from Time-Lapse Videos
  Yipin Zhou, Tamara L. Berg,
  European Conference on Computer Vision (ECCV), 2016.

- Solving Visual Madlibs with Multiple Cues
  Tatiana Tommasi, Arun Mallya, Bryan Plummer, Svetlana Lazebnik, Alexander C. Berg, Tamara L. Berg,
  British Machine Vision Conference (BMVC), 2016.

- Auto-Illustrating Poems and Songs with Style
  Katharina Schwarz, Tamara L. Berg,
  Asian Conference on Computer Vision (ACCV), 2016.

- When was that made?
  Sirion Vittayakorn, Alexander C. Berg, Tamara L. Berg,
  ArXiv, 2016.
  Supplementary material

- Detailed Garment Recovery from a Single-View Image
  Shan Yang, Tanya Ambert, Zherong Pan, Ke Wang, Licheng Yu, Tamara L. Berg, Ming C. Lin,
  ArXiv, 2016.

- Learning to Name Objects
  Vicente Ordonez, Wei Liu, Jia Deng, Yejin Choi, Alexander C. Berg, Tamara L. Berg,
  Communications of the ACM (CACM) March, 2016.
  Technical perspective

- Combining Multiple Sources of Knowledge in Deep CNNs for Action Recognition
  Eunbyung Park, Xufeng Han, Tamara L. Berg, Alexander C. Berg,
  Winter Conference on Applications of Computer Vision (WACV), 2016.

- Where to Buy It: Matching Street Clothing Photos in Online Shops
  M. Hadi Kiapour, Xufeng Han, Svetlana Lazebnik, Alexander C. Berg, Tamara L. Berg,
  International Conference on Computer Vision (ICCV), 2015.

Project Page, Spotlight Video

- Visual Madlibs: Fill in the blank Description Generation and Question Answering
  Licheng Yu, Eunbyung Park, Alexander C. Berg, Tamara L. Berg,
  International Conference on Computer Vision (ICCV), 2015.
  Project Page, Spotlight Video

- Temporal Perception and Prediction in Ego-Centric Video
  Yipin Zhou, Tamara L. Berg,
  International Conference on Computer Vision (ICCV), 2015.
  Project Page, Spotlight Video

- Visual Madlibs: Fill in the blank Description Generation and Question Answering
  Licheng Yu, Eunbyung Park, Alexander C. Berg, Tamara L. Berg,
  ArXiv, May 2015.
  Project Page

- Large Scale Retrieval and Generation of Image Descriptions
  Vicente Ordonez, Xufeng Han, Polina Kuznetsova,
  Girish Kulkarni, Margaret Mitchell, Kota Yamaguchi
  Karl Stratos, Amit Goyal, Jesse Dodge, Alyssa Mensch, Hal Daumé III, Alexander C. Berg, Yejin
  Choi, Tamara L. Berg, *International Journal of Computer Vision (IJCV), July 2015.*

- Predicting Entry-Level Categories
  Vicente Ordonez, Wei Liu, Jia Deng, Yejin Choi, Alexander C. Berg, Tamara L. Berg,
  To appear in International Journal of Computer Vision (IJCV) 2015.
  Project Page

- 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.
  Project Page

- 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.

- **ReferItGame: Referring to Objects in Photographs of Natural Scenes**
  Sahar Kazemzadeh, Vicente Ordonez, Mark Matten, Tamara L. Berg,
  Empirical Methods in Natural Language Processing (EMNLP) 2014.
  Project Page, ReferItGame

- **TREETALK: Composition and Compression of Trees for Image Descriptions**
  Polina Kuznetsova, Vicente Ordonez, Tamara L. Berg, Yejin Choi,
  Transactions of the Association for Computational Linguistics (TACL) - to be presented at EMNLP 2014.

- **Retrieving Similar Styles to Parse Clothing**
  Kota Yamaguchi, Hadi Kiapour, Luis E. Ortiz, Tamara L. Berg,
  Accepted to IEEE Transactions on Pattern Analysis (TPAMI) 2014.

- **Hipster Wars: Discovering Elements of Fashion Styles**
  Hadi Kiapour, Kota Yamaguchi, Alexander C. Berg, Tamara L. Berg,
  European Conference on Computer Vision (ECCV) 2014.
  HipsterWars Game
  Project Page

- **Learning High-level Judgments of Urban Perception**
  Vicente Ordonez, Tamara L. Berg,
  European Conference on Computer Vision (ECCV) 2014.
  Project Page

- **Chic or Social: Visual Popularity Analysis in Online Fashion Networks**
  Kota Yamaguchi, Tamara L. Berg, Luis E. Ortiz,
  ACM Multimedia (ACM MM) 2014.

- **Materials Discovery: Fine-Grained Classification of X-ray Scattering Images**
  Hadi Kiapour, Kevin Yager, Alexander C. Berg, Tamara L. Berg,
  Winter Conference on Applications of Computer Vision (WACV) 2014.

- **From Large Scale Image Categorization to Entry-Level Categories**
  Vicente Ordonez, Jia Deng, Yejin Choi, Alexander C. Berg, Tamara L. Berg,
  International Conference on Computer Vision (ICCV) 2013 (oral).

Winner of the Marr prize
Project Page

- Paper Doll Parsing: Retrieving Similar Styles to Parse Clothing
  Kota Yamaguchi, Hadi Kiapour, Tamara L. Berg,
  International Conference on Computer Vision (ICCV) 2013.
  Demo, Code/Data

- Exploring the role of gaze behavior and object detection in scene understanding
  Kiwon Yun, Yifan Peng, Dimitris Samaras, Greg Zelinsky, Tamara L Berg
  Frontiers in Psychology, Perception Science, Dec 2013.

- Generalizing Image Captions for Image-Text Parallel Corpus
  Polina Kuznetsova, Vicente Ordonez, Alexander C. Berg, Tamara L. Berg, Yejin Choi
  Association for Computational Linguistics, (ACL) 2013.
  Data

- Studying Relationships Between Human Gaze, Description, and Computer Vision
  Kiwon Yun, Yifan Peng, Greg Zelinsky, Dimitris Samaras, Tamara L Berg
  Computer Vision and Pattern Recognition, (CVPR) 2013.
  Data/Code

- Specifying the relationships between objects, gaze, and descriptions for scene understanding
  Kiwon Yun, Yifan Peng, Hossein Adeli, Tamara L Berg Dimitris Samaras, Greg Zelinsky,
  Journal of Vision, Abstract presented at VSS, July 2013.

- BabyTalk: Understanding and Generating Simple Image Descriptions
  Girish Kulkarni, Visruth Premraj, Vicente Ordonez, Sagnik Dhar, Siming Li, Yejin Choi, Alexander C. Berg, Tamara L Berg
  IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), Dec 2013.

- Parsing Clothing in Fashion Photographs [pdf]
  Kota Yamaguchi, Hadi Kiapour, Luis E. Ortiz, Tamara L. Berg
  Computer Vision and Pattern Recognition, (CVPR) 2012.
  Data/Code

- Understanding and Predicting Importance in Images [pdf]
  Alexander C. Berg, Tamara L. Berg, Hal Daumé III, Jesse Dodge, Amit Goyal, Xufeng Han, Alyssa Mensch, Margaret Mitchell, Aneesh Sood, Karl Stratos, Kota Yamaguchi
  Computer Vision and Pattern Recognition, (CVPR) 2012.
  Data/Annotations

- Collective Generation of Natural Image Descriptions [pdf]
  Polina Kuznetsova, Vicente Ordonez, Alexander C. Berg, Tamara L. Berg, Yejin Choi
  Association for Computational Linguistics (ACL) 2012.
  Pre-Processed Data

- Detecting Visual Text [pdf]
  Jesse Dodge, Amit Goyal, Xufeng Han, Alyssa Mensch, Margaret Mitchell, Karl Stratos, Kota Yamaguchi, Yejin Choi, Hal Daumé III, Alexander C. Berg, Tamara L. Berg,
  North American Chapter of the Association for Computational Linguistics (NAACL) 2012.
  Data/Code

- Midge: Generating Image Descriptions From Computer Vision Detections [pdf]
  Margaret Mitchell, Jesse Dodge, Amit Goyal, Kota Yamaguchi, Karl Sratos, Xufeng Han, Alysssa Mensch, Alexander C. Berg, Tamara L. Berg, Hal Daumé III
  European Chapter of the Association for computational Linguistics, (EACL) 2012.

- Interactive Music: Human Motion Initiated Music Generation Using Skeletal Tracking By Kinect [pdf]
  Tamara L. Berg, Debaleena Chattopadhyay, Margaret Schedel, Timothy Vallier
  SEAMUS, 2012.

- Two-person Interaction Detection Using Body-Pose Features and Multiple Instance Learning [pdf]
  Kiwon Yun, Jean Honorio, Debaleena Chattopadhyay, Tamara L. Berg, Dimitris Samaras
  The 2nd International Workshop on Human Activity Understanding from 3D Data at Conference on Computer Vision and Pattern Recognition, (CVPR) 2012.

- JHU-CLSP Summer 2011 Workshop
  Xufeng Han, Alexander C. Berg, Tamara L. Berg, Hal Daumé III, Jesse Dodge, Amit Goyal, Xufeng Han, Alyssa Mensch, Margaret Mitchell, Karl Stratos, Kota Yamaguchi

- **Im2Text: Describing Images Using 1 Million Captioned Photographs** [pdf]
  Vicente Ordonez,, Girish Kulkarni,, Tamara L. Berg
  Neural Information Processing Systems (NIPS), 2011.
  Dataset: SBU Captioned Photo Dataset

- **Composing Simple Image Descriptions using Web-scale N-grams.** [pdf]
  Siming Li, Girish Kulkarni, Tamara L. Berg, Alexander C. Berg, Yejin Choi
  Computational Natural Language Learning (CoNLL), 2011.

- **Iconizer: A Framework to Identify and Create Effective Representations for Visual Information Encoding** [pdf]
  Supriya Garg, Tamara L. Berg, Klaus Mueller
  The 11th International Symposium on Smart Graphics (SG), 2011

- **Baby Talk: Understanding and Generating Simple Image Descriptions** [pdf]
  Girish Kulkarni, Visruth Premraj, Sagnik Dhar, Siming Li, Yejin Choi, Alexander C. Berg, Tamara L. Berg
  IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2011 (oral)

- **High Level Describable Attributes for Predicting Aesthetics and Interestingness** [pdf]
  Sagnik Dhar, Vicente Ordonez, Tamara L. Berg,

IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2011

- **Who are you with and where are you going?** [pdf]
  Kota Yamaguchi, Alexander C. Berg, Luis Ortiz Tamara L. Berg,
  IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2011

- **Can Computers Master the Art of Communication? An Excursion with a Focus on Visual Analytics**
  Klaus Mueller, Supriya Garg, Julia Nam, Tamara L. Berg, Kevin McDonnell.
  IEEE Computer Graphics and Applications, May/June 2011.

- **Automatic Attribute Discovery and Characterization from Noisy Web Data** [pdf]
  Tamara L. Berg, Alexander C. Berg, Jonathan Shih
  The European Conference on Computer Vision (ECCV) 2010.
  Dataset: Attribute Discovery Dataset

- **iWalk, A Tool for Interacting with Geo-Located Data Through Movement and Gesture** [pdf]
  Visruth Premraj, Margaret Schedel, Tamara L. Berg,
  ACM Multimedia, Human Centered Multimedia Track (ACM MM) 2010.

- It's All About the Data
  Tamara L. Berg, Alexander Sorokin, Gang Wang, David A. Forsyth, Derek Hoiem, Ali Farhadi, Ian Endres.
  Proceedings of the IEEE, Special Issue on Internet Vision, August 2010, 98-8, 1434-1453.

- **Finding Iconic Images** [pdf] [ps]
  Tamara L. Berg, Alexander C. Berg,
  The 2nd Internet Vision Workshop at Conference on Computer Vision and Pattern Recognition (CVPR) 2009.

- Words and Pictures: Categories, Modifiers, Depiction and Iconography
  D.A. Forsyth, T.L. Berg, C. Alm, A. Farhadi, J. Hockenmaier, N. Loeff, G. Wang.

Object Categorization: Computer and Human Vision Perspectives. Cambridge University Press, 2009, in press. Sven Dickinson, Michael Tarr, Ales Leonardis, Bernt Schiele (eds)

- **Names and Faces** [pdf] [ps]
  Tamara L. Berg, Alexander C. Berg, Jaety Edwards, Michael Maire, Ryan White, Yee Whye Teh, Erik Learned-Miller, David A. Forsyth
  In Submission

- **Labeled Faces in the Wild: A Database for Studying Face Recognition in Unconstrained Environments** [pdf]
  Gary B. Huang, Marwan Mattar, Tamara Berg, and Erik Learned-Miller.
  The Workshop on Faces in Real-Life Images at European Conference on Computer Vision (ECCV) 2008.

- **Labeled Faces in the Wild: A Database for Studying Face Recognition in Unconstrained Environments** [pdf]
  Gary B. Huang, Manu Ramesh, Tamara Berg, and Erik Learned-Miller.
  University of Massachusetts, Amherst, Technical Report 07-49, October, 2007

- **Exploiting Words and Pictures** [pdf]
  Tamara L. Berg
  U.C. Berkeley Ph.D. Thesis, May. 2007

- Dataset Issues in Object Recognition [pdf] [ps]
  J. Ponce, T. L. Berg, M. Everingham, D.A. Forsyth, M. Hebert, S. Lazebnik, M. Marszalek, C. Schmid, B.C. Russell, A. Torralba, C.K.I. Williams, J. Zhang and A. Zisserman,
  Toward Category-Level Object Recognition, Springer-Verlag Lecture Notes in Computer Science. J. Ponce, M. Hebert, C. Schmid and A. Zisserman (eds.), Feb 2007.

- **Automatic Ranking of Iconic Images** [pdf] [ps]
  Tamara L. Berg, David A. Forsyth

U.C. Berkeley Technical Report, Jan. 2007

- **Names and Faces** [pdf] [ps]
  Tamara L. Berg, Alexander C. Berg, Jaety Edwards, Michael Maire, Ryan White, Yee
  Whye Teh, Erik Learned-Miller, David A. Forsyth
  U.C. Berkeley Technical Report, Jan. 2007

- Animals on the Web [pdf] [ps]
  Tamara L. Berg, David A. Forsyth
  Computer Vision and Pattern Recognition (CVPR) 2006
  Demo: Animals on the Web
  Dataset: Animals on the Web Dataset

- Shape Matching and Object Recognition using Low Distortion Correspondence [pdf]
  [ps] [ppt]
  Alexander C. Berg, Tamara L. Berg, Jitendra Malik
  Computer Vision and Pattern Recognition (CVPR), 2005

- Shape Matching and Object Recognition using Low Distortion Correspondence [pdf]
  [ps]
  Alexander C. Berg, Tamara L. Berg, Jitendra Malik
  U.C. Berkeley Technical Report, Dec. 2004

- Who's in the Picture? [pdf] [ps]
  Tamara L. Berg, Alexander C. Berg, Jaety Edwards, David A. Forsyth
  Neural Information Processing Systems (NIPS), 2004
  Demo: Face Dictionary
  Dataset: Faces In the Wild
  Dataset: Labeled Faces In the Wild

- Names and Faces in the News [pdf] [ps]
  Tamara L. Berg, Alexander C. Berg, Jaety Edwards, Michael Maire, Ryan White, Yee
  Whye Teh, Erik Learned-Miller, David A. Forsyth

Computer Vision and Pattern Recognition (CVPR), 2004

Current Funding

BIGDATA: Award #1633295 - BIGDATA: F: Collaborative Research: From Visual Data to Visual Understanding

NSF IIS Core: Award #1562098 - RI: Medium: Collaborative Research: Text-to-Image Reference Resolution for Image Understanding and Manipulation

NSF Faculty Early Career Development (CAREER) Program: Award #1444234 - Toward a General Framework for Words & Pictures. (previously Award #1054133) Project Page

NSF IIS Core: Award #1445409 - RI: Medium: Integrating Humans and Computers for Image and Video Understanding (previously Award #1161876)

NSF CI-New: Collaborative Research: Award #1405822 - Federated Data Set Infrastructure for Recognition Problems in Computer Vision

NSF II-New: Award #1405847 - Seeing the Future: Ubiquitous Computing in EyeGlasses

Microsoft, Google.

Past Funding

CI-P:Collaborative Research Award #1417991 - Visual Entailment data set and challenge for the language and vision communities (previously Award #1205354)

Seeing Social: Exploiting Computer Vision in Online Communities. Google Faculty Research Award

SBU/BNL Seed Grant: "The Data Sensorium: Multi-Modal Explorations of Scientific Data". Personel - Dan Weymouth, Kevin Yager, Tamara Berg, Margaret Schedel, Klaus Mueller, Dimitris Samaras, Tony Phillips, Rita Goldstein, Nelly Alia-Klein, Zabet Patterson.

NSF MRI-R2 grant: "Development of an Immersive Giga-pixel Display". Contributor as Senior Personel. Stony Brook FAHSS grant: "Encountering Data". Daniel Weymouth, Tamara Berg, Zabet Patterson,

Margaret Schedel, John Lutterbie.

Stony Brook FAHSS grant: "Hybrid Geographies". Zabet Patterson, Christa Erickson, Margaret Schedel, Tamara Berg, Raiford Guins, Andrew Uroskie.

Former Students & Postdocs

Sirion Vittayakorn (PhD, UNC) 2016 - Assistant Professor Thailand

Tatiana Tommasi (Postdoc, UNC 2015-2016)
Hadi Kiapour (PhD, UNC) 2015 - Research Scientist at eBay Research
Zhilan Zhou (Undergrad, UNC)
Justo (Miko) Marquez (Undergrad, UNC)
Jesse Hu (Undergrad, Duke)
Fred Landis (Undergrad, UNC)
Joe Puccio (Undergrad, UNC)
Vicente Ordonez (PhD, UNC) 2015 - Assistant Professor University of Virginia.
Rob Lewis (MS, UNC) 2015
Brian Christante (MS, UNC) 2015
Hannah Kerner (MS, UNC) 2015
Kota Yamaguchi (PhD, SBU) 2014 - Assistant Professor Tohoku University
Sahar Kazemzadeh (Undergrad, UNC) 2014
Aaron Brown (Undergrad, UNC) 2014
Josh Potter (Undergrad, UNC) 2014
Sean Freemerman (Undergrad, UNC) 2014
Roman Myers (Undergrad, UNC) 2014
Sebo Kim (Undergrad, SBU) 2014
Vinson Luo (High School, SBU Simons program) - summer 2013
Mark Matten (High School, SBU Simons program) - summer 2013
Priyanka Khante (Undergrad, SBU) - summer 2013
Chen Ling (MS, SBU) - 2013
Hanyu Liu (MS, SBU) - 2013
Chaitanya Kommini (MS Indepdendent Study, SBU) - 2012
Deepak Venkatachalam (MS Independent Study, SBU) - 2011
Farheen Noorie (MS Independent Study, SBU) - 2011
Girish Kulkarni (MS, SBU) - 2011 Epic Systems
Debaleena Chattopadhy (MS, SBU) - 2011 Indiana School of Informatics PhD
Sagnik Dhar (MS, SBU) 2010 - Volkswagen
Visruth Premraj (MS, SBU) 2010 Epic Systems

Erin Palmer (MS, SBU) 2009 - Factset
Jose Villa (MS, SBU) 2010
Piyush Kumat, (MS Indendent Study, SBU) Fall 2009

Alex Berg, my husband.

Arnold Miller, my dad.