

Boqing Gong, Ph.D.

CONTACT INFORMATION	Tencent AI Lab 10900 NE 8th Street, Suite 1000 Bellevue, WA 98004	☎ Available upon request ✉ BoqingGo@outlook.com 🌐 http://boqinggong.info
EMPLOYMENT	Principal Researcher Tencent AI Lab	01/2018 –
	Assistant Professor (tenure-track) Center for Research in Computer Vision Department of Computer Science University of Central Florida	08/2015 – 12/2017
	Summer Research Assistant Department of Media Analytics NEC Laboratories America	06/2013 – 08/2013
	Research Assistant Visual Computing Group Microsoft Research Asia	01/2008 – 06/2008
EDUCATION	University of Southern California , Los Angeles, California Ph.D. in Computer Science Thesis: Kernel Methods for Unsupervised Domain Adaptation Thesis committee: Fei Sha (advisor), Gaurav Sukhatme, and Shrikanth Narayanan	08/2011 – 08/2015
	The Chinese University of Hong Kong , Shatin, Hong Kong M.Phil. in Information Engineering Thesis: 3D Object Retrieval and Recognition Thesis advisors: Xiaoou Tang (primary), Jianzhuang Liu, and Xiaogang Wang	08/2008 – 07/2010
	University of Science and Technology of China , Hefei, Anhui, China B.E. in Electronic Engineering and Information Science	09/2004 – 07/2008

Overview. A research scientist in machine learning and computer vision, I am interested in developing data-efficient algorithms to solve large-scale visual recognition and planning problems. My recent research has been focusing on domain adaptation, reinforcement learning, semi-supervised and self-supervised learning, few-shot and zero-shot learning, learning from the Web, and the visual analytics of objects, human activities, scenes, and their attributes using deep and generative models.

The underlying theme of my research. I appreciate interdisciplinary research — abstracting interesting questions and applying new findings from various real-world problems to develop improved machine learning algorithms, and drawing techniques from machine learning to investigate fundamental tasks in computer vision. I strive to understand the mathematical structure of the research questions in order to develop effective and efficient algorithmic solutions, with strong analytical properties and compelling practical performance.

Recent work. My recent work has been driven by deep models (e.g., convolutional neural networks and recurrent neural networks) and generative models (e.g., sequential determinantal point process), as well as the confluence of the two (e.g., generative adversarial networks). I am also interested in expanding the realm of domain adaptation to investigate its applications in new computer vision and planning problems. Advances in domain adaptation will significantly increase our capability of deploying intelligent systems in challenging environments where uncertainty prevails. I have also picked up reinforcement learning since early 2018.

For applied research, I work on object recognition, semantic segmentation, human activity recognition, image tagging, supervised video summarization, face detection and recognition, 3D object retrieval, text summarization, and sentiment analysis.

Future work. I expect to develop the next generation of statistical machine learning algorithms which are capable of handling the mismatches in data and not limited by the simple assumption that the training and test data are drawn i.i.d. from the same distribution. Towards this long-term goal, my current plan is to research on domain adaptation, low-shot learning, and reinforcement learning of deep, generative, and structured models.

Statistics as of April 30th, 2018 by Google Scholar:
 Citations: 1538 h-index: 15 i10-index: 19 citations of (CVPR'12) [C4]: 656

* indicates student authors. = indicates equal contribution among authors.

INVITED BOOK CHAPTERS

- [B2] **B. Gong**, K. Grauman, and F. Sha. “Geodesic Flow Kernel and Landmarks: Kernel Methods for Unsupervised Domain Adaptation.” In *Domain Adaptation for Computer Vision Applications*, Springer Publishing, 2017.
- [B1] C. Gan*, T. Yang, and **B. Gong**. “A Multi-Source Domain Generalization Approach to Visual Attribute Detection.” In *Domain Adaptation for Computer Vision Applications*, Springer Publishing, 2017.

JOURNAL PUBLICATIONS

- [J3] A. Mazaheri, **B. Gong**, and M. Shah. “Learning a Multi-Concept Video Retrieval Model with Multiple Latent Variables.” *ACM Transactions on Multimedia Computing, Communications, and Applications (TOMM)*, Vol. 14, Issue 2, May 2018.
- [J2] **B. Gong**, K. Grauman, and F. Sha. “Learning Kernels for Unsupervised Domain Adaptation with Applications to Visual Object Recognition.” *International Journal of Computer Vision (IJCV)*, Vol. 109, Issue 1-2, pp. 3-27, Aug. 2014. [Link]
- [J1] **B. Gong**, J. Liu, X. Wang, and X. Tang. “Learning Semantic Signatures for 3D Object Retrieval.” *IEEE Transactions on Multimedia (T-MM)*, Vol. 5, Issue 2, pp. 369-377, Feb. 2013.

PEER-REVIEWED CONFERENCE PUBLICATIONS

- [C25] MA. Jamal*, H. Li, and **B. Gong**. “Face Detector Adaptation without Negative Transfer or Catastrophic Forgetting.” *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Salt Lake City, Utah, June 2018.
- [C24] L. Fan*=, W. Huang=, C. Gan, S. Ermon, **B. Gong**, and J. Huang. “End-to-End Learning of Motion Representation for Video Understanding.” *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Salt Lake City, Utah, June 2018. (Spotlight)
- [C23] C. Gan*, **B. Gong**, H. Su, and L. Guibas. “Geometry-Guided CNN for Self-Supervised Video Representation Learning.” *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Salt Lake City, Utah, June 2018.
- [C22] X. Wei*=, **B. Gong**=, Z. Liu, W. Lu, and L. Wang. “Improving the Improved Training of Wasserstein GANs: A Consistency Term and Its Dual Effect.” *Proceedings of the International Conference on Learning Representations (ICLR)*, Vancouver Canada, April 2018.
- [C21] Y. Ding*, L. Wang, D. Fan, and **B. Gong**. “A Semi-Supervised Two-Stage Approach to Learning from Noisy Labels.” *Proceedings of the IEEE Winter Conference on Applications of Computer Vision (WACV)*, Lake Tahoe, NV, March 2018. (Spotlight)
- [C20] Z. Yang*, **B. Gong**, and S. Narayanan. “Weighted Geodesic Flow Kernel for Interpersonal Mutual Influence Modeling and Emotion Recognition in Dyadic Interactions.” *Proceedings of the International Conference on Affective Computing and Intelligent Interaction (ACII)*, San Antonio, TX, October 2017. (Oral)

- [C19] Y. Zhang*, P. David, and **B. Gong**. “Curriculum Domain Adaptation for Semantic Segmentation of Urban Scenes.” *Proceedings of the IEEE International Conference on Computer Vision (ICCV)*, Venice, Italy, October 2017.
- [C18] C. Gan*, Y. Li*, H. Li, C. Sun, and **B. Gong**. “VQS: Linking Segmentations to Questions and Answers for Supervised Attention in VQA and Question-Focused Semantic Segmentation.” *Proceedings of the IEEE International Conference on Computer Vision (ICCV)*, Venice, Italy, October 2017.
- [C17] A. Sharghi*, J. Laurel*, and **B. Gong**. “Query-Focused Video Summarization: Dataset, Evaluation, and A Memory Network Based Approach.” *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Honolulu, Hawaii, Jun. 2017.
- [C16] M. Kalayeh*, **B. Gong**, and M. Shah. “Improving Facial Attribute Prediction using Semantic Segmentation.” *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Honolulu, Hawaii, Jun. 2017.
- [C15] Z. Li*, **B. Gong**, and T. Yang. “Improved Dropout for Shallow and Deep Learning.” *Proceedings of the Neural Information Processing Systems (NIPS)*, Barcelona, Spain, Dec. 2016.
- [C14] C. Gan*, C. Sun, L. Duan, and **B. Gong**. “Labeling-Free Video Recognition by Mutually Voting for Relevant Web Images and Web Video Frames.” *Proceedings of the European Conference on Computer Vision (ECCV)*, Amsterdam, Netherlands, Oct. 2016.
- [C13] A. Sharghi*, **B. Gong**, and M. Shah. “Query-Focused Extractive Video Summarization.” *Proceedings of the European Conference on Computer Vision (ECCV)*, Amsterdam, Netherlands, Oct. 2016.
- [C12] W-L. Chao*, S. Changpinyo*, **B. Gong**, and F. Sha. “An Empirical Study and Analysis of Generalized Zero-Shot Learning for Object Recognition in the Wild.” *Proceedings of the European Conference on Computer Vision (ECCV)*, Amsterdam, Netherlands, Oct. 2016. ([Spotlight](#))
- [C11] Y. Zhang*, **B. Gong**, and M. Shah. “Fast Zero-Shot Image Tagging.” *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Las Vegas, NV, Jun. 2016.
- [C10] C. Gan*, T. Yang, and **B. Gong**. “Learning Attributes Equals Multi-Source Domain Generalization.” *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Las Vegas, NV, Jun. 2016. ([Spotlight](#))
- [C9] S. Changpinyo*, W. Chao*, **B. Gong**, and F. Sha. “Synthesized Classifiers for Zero-Shot Learning.” *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Las Vegas, NV, Jun. 2016. ([Oral](#), acceptance rate 3.9%)
- [C8] W. Chao*, **B. Gong**, F. Sha, and K. Grauman. “Large-Margin Determinantal Point Processes.” *Proceedings of the Conference on Uncertainty in Artificial Intelligence (UAI)*, Amsterdam, Netherlands, July 2015. [[Link](#)]
- [C7] **B. Gong**, W. Chao, K. Grauman, and F. Sha. “Diverse Sequential Subset Selection for Supervised Video Summarization.” *Proceedings of the Neural Information Processing Systems (NIPS)*, Montreal, Canada, Dec. 2014.
- [C6] **B. Gong**, K. Grauman, and F. Sha. “Reshaping Visual Datasets for Domain Adaptation.” *Proceedings of the Neural Information Processing Systems (NIPS)*, Lake Tahoe, NV, Dec. 2013.

- [C5] **B. Gong**, K. Grauman, and F. Sha. “Connecting the Dots with Landmarks: Discriminatively Learning Domain-Invariant Features for Unsupervised Domain Adaptation.” *Proceedings of the International Conference on Machine Learning (ICML)*, Atlanta, GA, Jun. 2013. (**Oral**)
- [C4] **B. Gong**, Y. Shi, F. Sha, and K. Grauman. “Geodesic Flow Kernel for Unsupervised Domain Adaptation.” *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Providence, RI, Jun. 2012. (**Oral**, acceptance rate 2.5%)
- [C3] **B. Gong**, J. Liu, X. Wang, and X. Tang. “3D Object Retrieval with Semantic Attributes.” *Proceedings of the 19th ACM international conference on Multimedia (ACM MM)*, Scottsdale, Arizona, Dec. 2011. (**demo**)
- [C2] **B. Gong**, C. Xu, J. Liu, and X. Tang. “Boosting 3D Object Retrieval by Object Flexibility”. *Proceedings of the 17th ACM international conference on Multimedia (ACM MM)*, Beijing, China, Oct. 2009.
- [C1] **B. Gong**, Y. Wang, J. Liu, and X. Tang. “Automatic Facial Expression Recognition on a Single 3D Face by Exploring Shape Deformation”. *Proceedings of the 17th ACM international conference on Multimedia (ACM MM)*, Beijing, China, Oct. 2009.

SELECTED PEER-REVIEWED WORKSHOP PUBLICATIONS

- [W2] A. Mazaheri*, B. Gong, and M. Shah. “Learning a Multi-Concept Video Retrieval Model with Multiple Latent Variables.” *The 12th IEEE International Workshop on Multimedia Information Processing and Retrieval*, Dec. 2016.
- [W1] **B. Gong**, F. Sha, and K. Grauman. “Overcoming Dataset Bias: An Unsupervised Domain Adaptation Approach.” *The First International Workshop on Large Scale Visual Recognition and Retrieval (BigVision)* at NIPS, Lake Tahoe, NV, Dec. 2012. (**Oral**)

GRANTS

BIGDATA: IA: Distributed Semi-Supervised Training of Deep Models and Its Applications in Video Understanding

Funding agency: **NSF** IIS-1741431 Role: Principal Investigator (PI)

Amount: (\$662,431+\$42,500 AWS Credits)/3

Duration: 09/2017 – 08/2020 (Transferred to ex-colleagues after joining Tencent)

Significance: The first of its kind ever granted to University of Central Florida

CRII: RI: Multi-Source Domain Generalization Approaches to Visual Attribute Detection

Funding agency: **NSF** IIS-1566511 Role: Sole Principal Investigator (So-PI)

Amount: \$175,000

Duration: 05/2016 – 04/2018

Significance: The first of its kind ever granted to University of Central Florida

Multiple-Modal Summarization of Videos and Photo Albums with User Input

FutureWei Technologies Inc., So-PI, \$100,000 (Declined) 07/2017

Face Detector Adaptation without Forgetting

Adobe Research, So-PI, \$10,000 05/2017

User-Guided Visual Analytics

Adobe Research, So-PI, \$7,000 10/2016

Collaborative Research: Florida-IT-Pathways to Success (Flit-Path)
NSF DUE-1643965, Co-PI 10/2016 – 12/2017

TEACHING
EXPERIENCES

CAP 4453: Robot Vision
Fall 2016, Number of students: 64, Student rating: 3.90/5 (Department median: 3.81)
Fall 2017 (fully online), Number of students: 30, rating: **4.29/5** (Department median: 3.82)

CAP 6412: Advanced Computer Vision
Spring 2016, Number of students: 18, Student rating: **4.10/5** (Department median: 3.85)

INVITED TALKS

Learning from Web Data and Adapting Beyond It
IEEE CVPR Workshop on Visual Understanding by Learning from Web Data 06/18/2018

The Multiple Shades of Dropout for Discriminative and Generative Deep Neural Networks
Session of “Stochastic Optimization Methods and Approximation Theory in Machine Learning” at the INFORMS Annual Meeting 11/04/2018

Domain Adaptation for Robust Visual Recognition and Semantic Segmentation
Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences 04/02/2018
Shenzhen University 03/26/2018
International Computer Science Institute, UC Berkeley 12/08/2017
Beijing University of Posts and Telecommunications 11/06/2017
Department of Electrical Engineering, UC Santa Cruz 10/25/2017
Google Research at Mountain View 09/20/2017
Department of Media Analytics, NEC Laboratories America 05/08/2017
NVIDIA Research 06/08/2017

Sequential Determinantal Point Processes and Variations for Supervised Video Summarization
Department of Computer Science, Stanford University 03/20/2017
Adobe Systems Inc. 03/30/2017
Facebook Inc. 06/07/2017
University of California at Berkeley 08/24/2017

Domain Adaptation for Human Activity Detection, Recognition, and Summarization
Army Research Office / Information Science Institute Workshop on Multi-Modal Data Analysis for Human Activity Detection and Understanding 09/13/2016

Query-Focused Extractive Video Summarization via Determinantal Point Processes
Electrical Engineering and Computer Sciences, Univ. California at Berkeley 09/21/2017
Department of Computer Science, University of California at Irvine 07/08/2016
Snapchat Inc. 08/18/2016

Kernel Methods for Unsupervised Domain Adaptation
Information Science Institute, University of Southern California 12/11/2015
Department of Computer Science, Tulane University 04/23/2015
Department of Machine Learning, NEC Laboratories America 04/09/2015

Department of EECS, University of Central Florida	04/07/2015
School of Computing, Informatics, and Decision Systems Engineering, ASU	04/02/2015
IBM T.J. Watson Research Center (colloquium)	01/15/2015
ECCV Workshop on TASK-CV	09/12/2014

Reshaping Datasets for Unsupervised Domain Adaptation IEEE ICDM Workshop on Practical Transfer Learning	11/14/2015
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Sequential Determinantal Point Process: Modeling the Diverse and Sequential Properties in Video Summarization Department of EECS, University of Central Florida	07/08/2015
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Discriminative Kernel Learning for Unsupervised Domain Adaptation Machine Learning and Instrument Autonomy Group, JPL, NASA	01/09/2014
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ACADEMIC &
PROFESSIONAL
SERVICES

National Science Foundation (NSF) Panelist: three panels in 2016 and one in 2017
Area chair of IEEE Winter Conference on Applications of Computer Vision (WACV) 2018–19
Reviewer of

Neural Information Processing Systems (NIPS)	2014 –
International Conference on Machine Learning (ICML)	2015 –
IEEE Conference on Computer Vision and Pattern Recognition (CVPR)	2013 –
European Conference on Computer Vision (ECCV)	2014 –
IEEE International Conference on Computer Vision (ICCV)	2013 –
Conference on Artificial Intelligence and Statistics (AISTATS)	2017 –
International Conference on Learning Representations (ICLR)	2017 –
Asian Conference on Computer Vision (ACCV)	2016 –
The British Machine Vision Conference (BMVC)	2017 –
Journal of Machine Learning Research (JMLR)	
Springer International Journal of Computer Vision (IJCV)	
IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI)	
IEEE Transactions on Neural Networks and Learning Systems (T-NNLS)	
IEEE Transactions on Image Processing (T-IP)	
IEEE Transactions on Multimedia (T-MM)	
Springer Machine Learning Artificial Intelligence IET Computer Vision Elsevier Waste Management ACM Transactions on Multimedia (ACM TOMM)	

Program committee member of

Association for the Advancement of Artificial Intelligence Conference (AAAI),	2015, 2017
International Joint Conference on Artificial Intelligence (IJCAI),	2015, 2016
IEEE ICDM 2015 Workshop on Practical Transfer Learning	

ECCV 2016 Workshop on Transferring and Adapting Source Knowledge in Computer Vision

	Mentor of Ph.D. Forum of IEEE WACV	2018
DEPARTMENTAL SERVICES AT UCF	Faculty Search Committee	2017 – 2018
	Awards Committee of the College of Engineering and Computer Science	2017 – 2018
	CRCV Research Associate Search Committee	2016
	Nielsen Fellowship Search Committee	2016
STUDENTS	Ph.D. students:	
	Yang Zhang (research/teaching assistant)	01/2016 –
	Aidean Sharghi (research/teaching assistant)	01/2016 –
	Abdullah Jamal (research/teaching assistant)	01/2016 –
	Yifan Ding (ORC fellowship and research/teaching assistant)	08/2016 –
	Yandong Li (Research assistant)	08/2017 –
	Samer Iskander (teaching assistant, co-supervise with Dr. Niels Lobo)	01/2016 – 05/2016
	Remote Ph.D. student at Tsinghua University, China:	
	Chuang Gan	08/2015 – 01/2018
	Master students:	
	Fareeha Irfan (Google Lime Scholarship and research/teaching assistant)	08/2015 – 08/2017
	Suhas Nithyanand (directed research)	08/2016 – 12/2016
	Rohan Singh Rajput (independent study)	08/2016 – 12/2016
	Defense and candidacy committee member of	
	Kenneth Thompson (Ph.D., University of Central Florida)	2016
	Uzair Tariq (Master, University of Central Florida)	2017
	Hong Zhang (Ph.D., University of Central Florida)	2017
	Dustin Morley (Ph.D., University of Central Florida)	2018
	Maryam Jaberri (Ph.D., University of Central Florida)	2018
	Undergraduate students:	
Adam Vest, Univ. of Louisville (NSF Research Experiences for Undergraduates (REU))	2017	
Geraldine Versfeld, University of Central Florida (NSF REU)	2017	
Truman Thames, Fayetteville State University UNC (NSF REU)	2017	
Jacob Scott Laurel, University of Alabama at Birmingham (NSF REU)	2016	
Kylie McCarty, University of Central Florida (NSF REU)	2016	
Kevin Duarte, University of Central Florida (NSF REU)	2016	
Michael Lopez (undergraduate research program)	Spring 2016	
Adam Albright, University of Central Florida (senior design)	2016 – 2017	
Qiang Li, University of Central Florida (senior design)	2016 – 2017	
Kyle Ferguson, University of Central Florida (senior design)	2016 – 2017	

SELECTED
HONORS AND
AWARDS

- * IEEE CVPR 2017 Outstanding Reviewer 2017
- * Viterbi School of Engineering Doctoral Fellowship 2011–2015
- * Neural Information Processing Systems (NIPS) Travel Award 2014
- * Postgraduate Studentship, The Chinese University of Hong Kong 2008 – 2010
- * Triple-A Outstanding Student of Anhui Province, China 2007
- * First Prize (Anhui), second Prize (China), Undergraduate Math Contest in Modeling 2007
- * Huawei Scholarship 2006