

# Devi Parikh

## Curriculum Vitae

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### EDUCATION

**CARNEGIE MELLON UNIVERSITY** Pittsburgh, PA  
Ph.D., Electrical and Computer Engineering, 2009

**CARNEGIE MELLON UNIVERSITY** Pittsburgh, PA  
MS, Electrical and Computer Engineering, 2007

**ROWAN UNIVERSITY** Glassboro, NJ  
B.S. Electrical and Computer Engineering, Minor: Computer Science, 2005

### RESEARCH INTERESTS

Computer Vision, Machine Learning, Pattern Recognition, Artificial Intelligence, Visual Recognition, Scene Understanding, Language and Vision, Common Sense Reasoning, Human-Machine Communication, Contextual Reasoning, Human Debugging.

### APPOINTMENTS

**GEORGIA TECH** August 2016 – current  
Assistant Professor  
School of Interactive Computing  
Lead: Computer Vision Lab  
Atlanta, GA

**FACEBOOK AI RESEARCH (FAIR)** July 2017 - current  
Research Scientist  
Menlo Park, CA

**FACEBOOK AI RESEARCH (FAIR)** August 2016 – July 2017  
Visiting Researcher  
Menlo Park, CA

**VIRGINIA TECH** August 2016 – current  
Research Assistant Professor  
Bradley Department of Electrical and Computer Engineering  
Blacksburg, VA

**VIRGINIA TECH** January 2013 – August 2016  
Assistant Professor  
Bradley Department of Electrical and Computer Engineering  
Lead: Computer Vision Lab  
Core Faculty: Virginia Center for Autonomous Systems (VaCAS)  
Faculty Member: Discovery Analytics Center (DAC)  
Blacksburg, VA

**MICROSOFT RESEARCH** Summer 2015  
Visiting Researcher  
Redmond, WA

**TOYOTA TECHNOLOGICAL INSTITUTE (TTIC)** August 2009 – December 2012  
Research Assistant Professor  
Chicago, IL

<b>CARNEGIE MELLON UNIVERSITY</b> Visiting Research Assistant Professor	Summer 2012 Pittsburgh, PA
<b>MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT)</b> Visiting Scientist	Spring 2011 Cambridge, MA
<b>UNIVERSITY OF TEXAS AT AUSTIN</b> Visiting Researcher	Summer 2010 Austin, TX
<b>MICROSOFT RESEARCH</b> Visiting Researcher	Summer 2010 Redmond, WA
<b>CARNEGIE MELLON UNIVERSITY</b> Research Assistant	Fall 2005 – Summer 2009 Pittsburgh, PA
<b>MICROSOFT RESEARCH</b> Research Intern	Summer 2007, Summer 2008 Redmond, WA
<b>INTEL RESEARCH LABORATORY</b> Research Intern	Summer 2006 Pittsburgh, PA
<b>ROWAN UNIVERSITY</b> Research Assistant	Fall 2003 – Spring 2005 Glassboro, NJ

#### AWARDS AND HONORS

- Sigma XI Young Faculty Award (Georgia Tech), 2018
- Forbes' list of 20 "Incredible Women Advancing A.I. Research"
- IJCAI Computers and Thought Award, 2017
- Google Faculty Research Award, 2016
- Amazon Academic Research Award, 2016
- Rowan University's 40 Under 40, 2016
- Rowan University Medal of Excellence for Alumni Achievement, 2016
- Office of Naval Research (ONR) Young Investigator Program (YIP) award, 2016.
- Sloan Research Fellowship, 2016
- National Science Foundation (NSF) Faculty Early Career Development (CAREER) award, 2016
- Google Faculty Research Award, 2015
- Outstanding New Assistant Professor, College of Engineering, Virginia Tech, 2015
- Allen Distinguished Investigator in Artificial Intelligence, 2014

- Google Faculty Research Award, 2014
- Outstanding Reviewer Award, 2014  
European Conference on Computer Vision (ECCV)
- Army Research Office (ARO) Young Investigator Program (YIP) Award, 2014
- Thank-a-teacher, 2014, 2015  
Virginia Tech Center for Instructional Development and Education Research (CIDER)
- Google Faculty Research Award, 2012
- Outstanding Reviewer Award, 2012  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR)
- David Marr (Best Paper) Prize, 2011  
International Conference on Computer Vision (ICCV)
- Best Poster Award, 2011  
Fine Grained Visual Categorization (FGVC) Workshop  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR)
- Graduate Research Fellowship, 2006-2009  
National Science Foundation (NSF)
- Best Paper Award, 2007  
Beyond Patches workshop  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR)
- Best Presentation Award, 2007  
Course on Learning-based Methods in Vision  
Carnegie Mellon University
- Golden Key National Honor Society, 2004, 2005
- New Jersey Epsilon Honor Society, 2004, 2005
- Meritorious Award, 2003, 2004, 2005  
International Interdisciplinary/Mathematical Contest in Modeling
- Certificate of Achievement in Mathematics, 2004  
Rowan University
- Broome Alumni Undergraduate Scholarship, 2003, 2004  
Rowan University
- Academic Scholarship, 2003-2004  
Professional Engineering Society of South Jersey
- Academic Scholarship, 2003-2004  
National Science Foundation (NSF)
- Hazel P. Valiant Student Scholarship, 2002  
Rowan University

- Research Experience for Undergraduates, Summer 2002  
National Science Foundation (NSF)

## FUNDING

- Amazon AWS Machine Learning Research Award, “Towards AI Agents that can See, Talk, and Act”
- Gift from Facebook
- DARPA XAI (Explainable AI), “EQUAS – Explainable QUESion Answering System”
- Google Faculty Research Award, “Making the V in VQA Matter: Elevating the Role of Image Understanding in Visual Question Answering”
- Amazon Academic Research Award (AARA), “Counting Everyday Objects in Everyday Scenes”
- Office of Naval Research (ONR) Young Investigator Program (YIP) award, “Visual Question Answering (VQA)”
- National Science Foundation (NSF) Faculty Early Career Development (CAREER) award, “Visual Question Answering (VQA)”
- Alfred P. Sloan Foundation, “Words, Pictures, and Common Sense”
- National Science Foundation Research Traineeship Program (NRT), “UrbComp: Data Science for Modeling, Understanding, and Advancing Urban Populations”
- Army Research Lab, “Answering Binary Questions about Images”
- Army Research Lab, “Performance Evaluation and Input Quality Assessment”
- Institute for Critical Technology and Applied Science (ICTAS), Virginia Tech, “Visual Question Answering (VQA)”
- Google Faculty Research Award, “Visual Question Answering (VQA)”
- Paul G. Allen Family Foundation, “Learning Common Sense via Visual Abstractions”
- Google Faculty Research Award, “Learning from Visual Abstractions”
- Army Research Office (ARO) Young Investigator Program (YIP), “Semantic Characterization of Failures and Beliefs of Machine Perception Systems”
- Gift from Microsoft
- Google Faculty Research Award, “Relative Attributes-based Feedback for Image Search”
- National Science Foundation, “Debugging Machine Visual Recognition via Humans in the Loop”

## TEACHING

- Instructor: Computer Vision (Georgia Tech)  
Fall 2018
- Instructor: Vision and Language (Georgia Tech)  
Fall 2017, Instructor rating: 4.8/5.00
- Instructor: Graduate Level Advanced Topics in Computer Vision (Virginia Tech)  
Spring 2016, Instructor rating: 5.83/6.00  
Spring 2014, Instructor rating: 5.62/6.00  
Spring 2013, Instructor rating: 5.86/6.00  
(Department average for courses at same level: 5.16/6.00)
- Instructor: Undergraduate Level Introduction to Computer Engineering (Virginia Tech)  
Spring 2015, Instructor rating: 5.28/6.00  
Fall 2014, Instructor rating: 5.32/6.00  
(Department average for courses at same level: 4.65/6.00)
- Instructor: Undergraduate Level Introduction to Computer Vision (Virginia Tech)  
Fall 2015, Instructor rating: 5.50/6.00
- Instructor: Graduate Level Computer Vision (Virginia Tech)  
Fall 2015, Instructor rating: 5.52/6.00  
Fall 2013, Instructor rating: 5.40/6.00  
(Department average for courses at same level: 5.01/6.00)
- Guest Lecturer: Undergraduate Level Introduction to Computer Vision (TTIC), Spring 2010
- Teaching Assistant: Graduate Level Image, Video and Multimedia (CMU), Spring 2008
- Teaching Assistant: Undergraduate Level Signals and Systems (CMU), Fall 2007

## PUBLICATIONS

### Books

1. R. Feris, C. Lampert, and D. Parikh (Editors). Visual Attributes. Springer, Advances in Computer Vision and Pattern Recognition Series, 2017.
2. D. Batra, A. Kowdle, D. Parikh, J. Luo and T. Chen. Interactive Co-segmentation of Objects in Image Collections. SpringerBriefs in Computer Science, 2011.

### Theses

3. D. Parikh. Modeling Context for Image Understanding: When, For What, and How? Ph.D. Thesis. Carnegie Mellon University, August, 2009.

### Journal Articles

4. Y. Goyal, T. Khot, A. Agrawal, D. Summers-Stay, D. Batra, and D. Parikh. Making the V in VQA Matter: Elevating the Role of Image Understanding in Visual Question Answering. *International Journal of Computer Vision (IJCV)*, 2018.
5. A. Das, S. Kottur, K. Gupta, A. Singh, D. Yadav, J. Moura, D. Parikh, and D. Batra. Visual Dialog. *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 2018.

6. A. Das, H. Agrawal, C. L. Zitnick, D. Parikh, and D. Batra. Human Attention in Visual Question Answering: Do Humans and Deep Networks Look at the Same Regions? *Computer Vision and Image Understanding (CVIU)*, 2017.
7. A. Agrawal\*, J. Lu\*, S. Antol\*, M. Mitchell, C. L. Zitnick, D. Parikh, and D. Batra. VQA: Visual Question Answering. \*joint first authors. *Special Issue on Combined Image and Language Understanding, International Journal of Computer Vision (IJCV)*, 2017
8. C. L. Zitnick, A. Agrawal, S. Antol, M. Mitchell, D. Batra, and D. Parikh. Measuring Machine Intelligence Through Visual Question Answering. *AI Magazine*, (2016)
9. R. Mottaghi, S. Fidler, A. Yuille, R. Urtasun and D. Parikh. Human-Machine CRFs for Identifying Bottlenecks in Scene Understanding. *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 2016.
10. C. L. Zitnick, R. Vedantam and D. Parikh. Adopting Abstract Images for Semantic Scene Understanding. *Special Issue on the best papers at the 2013 IEEE Conference on Computer Vision and Pattern Recognition (CVPR), IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 2016.
11. A. Kovashka, D. Parikh and K. Grauman. WhittleSearch: Interactive Image Search with Relative Attribute Feedback. *International Journal of Computer Vision (IJCV)*, 2015.
12. P. Isola, D. Parikh, J. Xiao, A. Torralba and A. Oliva. What Makes a Photograph Memorable? *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 2014.
13. D. Parikh, C. L. Zitnick and T. Chen. Exploring Tiny Images: The Roles of Appearance and Contextual Information for Machine and Human Object Recognition. *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 2012.
14. D. Batra, A. Kowdle, D. Parikh, J. Luo and T. Chen. Interactively Co-segmenting Topically Related Images with Intelligent Scribble Guidance. *International Journal of Computer Vision (IJCV)*, January 2011.
15. D. Parikh and T. Chen. Unsupervised Modeling of Objects and their Hierarchical Contextual Interactions. *EURASIP Journals on Image and Video Processing, Special Issue on Patches in Vision*, 2009.
16. D. Parikh and T. Chen. Data Fusion and Cost Minimization for Intrusion Detection. *IEEE Transactions on Information Forensics and Security, Special Issue on Statistical Methods in Network Security and Forensics*, 2008.
17. R. Polikar, A. Topalis, D. Parikh, D. Green, J. Kounios, and C. Clark. An Ensemble Based Data Fusion Approach for Early Diagnosis of Alzheimer's Disease. *Information Fusion, Special Issue on Applications of Ensemble Methods*, January 2008.
18. D. Parikh, and R. Polikar. An Ensemble Based Incremental Learning Approach to Data Fusion. *IEEE Transactions on Systems, Man and Cybernetics*, April 2007.
19. Y. Mehta, K. Jahan, J. Laicovsky, L. Miller, D. Parikh, and A. Lozano. Evaluate the Effect of Coarse and Fine Rubber Particles on Laboratory Rutting Performance of Asphalt Concrete Mixtures. *The Journal of Solid Waste Technology And Management*, 2005.

**Peer Reviewed Conference Papers (acceptance rates typically 3%~25%)**

20. N. R. Ke, A. Singh, A. Touati, A. Goyal, Y. Bengio, D. Parikh, and D. Batra. Modeling the Long Term Future in Model-Based Reinforcement Learning. *International Conference on Learning Representations (ICLR)*, 2019.
21. J. Yang\*, J. Lu\*, S. Lee, D. Batra, and D. Parikh. \*joint first authors. Visual Curiosity: Learning to Ask Questions to Learn Visual Recognition. *Conference on Robot Learning (CoRL)*, 2018. **(Oral)**
22. A. Das, G. Gkioxari, S. Lee, D. Parikh, and D. Batra. Neural Modular Control for Embodied Question Answering. *Conference on Robot Learning (CoRL)*, 2018. **(Spotlight)**
23. A. Chandrasekaran\*, V. Prabhu\*, D. Yadav\*, P. Chattopadhyay\*, and Devi Parikh. \*equal contribution. Do Explanations Make VQA Models More Predictable To A Human? *Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2018
24. S. Kottur, J. M. F. Moura, D. Parikh, D. Batra, and M. Rohrbach. Visual Coreference Resolution in Visual Dialog using Neural Module Networks. *European Conference on Computer Vision (ECCV)*, 2018.
25. R. R. Selvaraju\*, P. Chattopadhyay\*, M. Elhoseiny, T. Sharma, D. Batra, D Parikh, and S. Lee. \*joint first authors. Choose Your Neuron: Incorporating Domain Knowledge through Neuron Importance. *European Conference on Computer Vision (ECCV)*, 2018.
26. J. Yang, J. Lu, S. Lee, D. Batra, and D. Parikh. Graph R-CNN for Scene Graph Generation. *European Conference on Computer Vision (ECCV)*, 2018.
27. A. Chandrasekaran, D. Parikh, and M. Bansal. Punny Captions: Witty Wordplay in Image Descriptions. *Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL HLT)*, 2018.
28. A. Das, S. Datta, G. Gkioxari, S. Lee, D. Parikh, and D. Batra. Embodied Question Answering. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2018. **(Oral)**
29. J. Lu\*, J. Yang\*, D. Batra, and D. Parikh. Neural Baby Talk. \*joint first authors. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2018. **(Spotlight)**
30. A. Agrawal, D. Batra, D. Parikh, and A. Kembhavi. Don't Just Assume; Look and Answer: Overcoming Priors for Visual Question Answering. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2018.
31. J. Lu, A. Kannan, J. Yang, D. Parikh, and D. Batra. Best of Both Worlds: Transferring Knowledge from Discriminative Learning to a Generative Visual Dialog Model. *Neural Information Processing Systems (NIPS)*, 2017.
32. R. R. Selvaraju, A. Das, R. Vedantam, M. Cogswell, D. Parikh, and D. Batra. Grad-CAM: Why did you say that? Visual Explanations from Deep Networks via Gradient-based Localization. *International Conference on Computer Vision (ICCV)*, 2017
33. P. Chattopadhyay\*, D. Yadav\*, V. Prabhu, A. Chandrasekaran, A. Das, S. Lee, D. Batra, and D. Parikh. Evaluating Visual Conversational Agents via Cooperative Human-AI Games. *AAAI Conference on Human Computation and Crowdsourcing (HCOMP)*, 2017
34. M. Lewis, D. Yarats, Y. N. Dauphin, D. Parikh, and D. Batra. Deal or No Deal? End-to-End Learning for Negotiation Dialogues. *Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2017



35. A. Vijayakumar, R. Vedantam, and D. Parikh. Sound-Word2Vec: Learning Word Representations Grounded in Sounds. *Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2017
36. A. Miller, W. Feng, A. Fisch, J. Lu, D. Batra, A. Bordes, D. Parikh, and J. Weston. ParlAI: A Dialog Research Software Platform. *Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2017 (Demo paper)
37. A. Das, S. Kottur, K. Gupta, A. Singh, D. Yadav, J. Moura, D. Parikh, and D. Batra. Visual Dialog. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2017. **(Spotlight)**
38. J. Lu\*, C. Xiong\*, D. Parikh, and R. Socher. Knowing When to Look: Adaptive Attention via A Visual Sentinel for Image Captioning. \*joint first authors. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2017. **(Spotlight)**
39. R. Vedantam, S. Bengio, K. Murphy, D. Parikh, and G. Chechik. Context-aware Captions from Context-agnostic Supervision. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2017. **(Spotlight)**
40. P. Chattopadhyay\*, R. Vedantam\*, Ramprasaath RS, D. Batra, and D. Parikh. Counting Everyday Objects in Everyday Scenes. \*joint first authors. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2017. **(Spotlight)**
41. Y. Goyal\*, T. Khot\*, D. Summers-Stay, D. Batra, and D. Parikh. Making the V in VQA Matter: Elevating the Role of Image Understanding in Visual Question Answering. \*joint first authors. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2017.
42. J. Yang, A. Kannan, D. Batra, and D. Parikh. LR-GAN: Layered Recursive Generative Adversarial Networks for Image Generation. *International Conference on Learning Representations (ICLR)*, 2017.
43. J. Lu, J. Yang, D. Batra, and D. Parikh. Hierarchical Question-Image Co-Attention for Visual Question Answering. *Neural Information Processing Systems (NIPS)*, 2016.
44. A. Das, H. Agrawal, C. L. Zitnick, D. Parikh, and D. Batra. Human Attention in Visual Question Answering: Do Humans and Deep Networks look at the same regions? *Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2016.
45. A. Ray, G. Christie, M. Bansal, D. Batra, and D. Parikh. Question Relevance in VQA: Identifying Non-Visual And False-Premise Questions. *Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2016.
46. A. Agrawal, D. Batra, and D. Parikh. Analyzing the Behavior of Visual Question Answering Models. *Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2016.
47. H. Agrawal, A. Chandrasekaran, D. Batra, D. Parikh, and M. Bansal. Sort Story: Sorting Jumbled Images and Captions into Stories. *Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2016.
48. X. Lin and D. Parikh. Leveraging Visual Question Answering for Image-Caption Ranking. *European Conference on Computer Vision (ECCV)*, 2016.
49. A. Dubey, N. Naik, D. Parikh, R. Raskar, and C. Hidalgo. Deep Learning the City: Quantifying Urban Perception at a Global Scale. *European Conference on Computer Vision (ECCV)*, 2016.



50. A. Chandrasekaran, A. Kalyan, S. Antol, M. Bansal, D. Batra, C. L. Zitnick, and D. Parikh. We Are Humor Beings: Understanding and Predicting Visual Humor. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2016. **(Spotlight)**
51. P. Zhang\*, Y. Goyal\*, D. Summers-Stay, D. Batra, and D. Parikh. Yin and Yang: Balancing and Answering Binary Visual Questions. \*joint first authors. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2016.
52. S. Kottur\*, R. Vedantam\*, J. Moura, and D. Parikh. Visual Word2Vec (vis-w2v): Learning Visually Grounded Word Embeddings using Abstract Scenes. \*joint first authors. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2016.
53. J. Yang, D. Parikh, and D. Batra. Joint Unsupervised Learning of Deep Representations and Image Clusters. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2016.
54. T. Huang, F. Ferraro, N. Mostafazadeh, I. Misra, J. Devlin, A. Agrawal, R. Girshick, X. He, P. Kohli, D. Batra, C. L. Zitnick, D. Parikh, L. Vanderwende, M. Galley, and M. Mitchell. Visual Storytelling. *Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL HLT)*, 2016.
55. N. Mostafazadeh, N. Chambers, X. He, D. Parikh, D. Batra, L. Vanderwende, P. Kohli, and J. Allen. A Corpus and Evaluation Framework for Deeper Understanding of Commonsense Stories. *Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL HLT)*, 2016. **(Oral)**
56. S. Lad, B. Romera Parades, J. Valentin, Philip Torr, and D. Parikh. Knowing Who To Listen To: Prioritizing Experts from a Diverse Ensemble for Attribute Personalization. *International Conference on Image Processing (ICIP)*, 2016.
57. S. Antol\*, A. Agrawal\*, J. Lu, M. Mitchell, D. Batra, C. L. Zitnick, and D. Parikh. VQA: Visual Question Answering. \*joint first authors. *International Conference on Computer Vision (ICCV)*, 2015.
58. R. Vedantam\*, X. Lin\*, T. Batra, C. L. Zitnick, and D. Parikh. Learning Common Sense Through Visual Abstraction. \*joint first authors. *International Conference on Computer Vision (ICCV)*, 2015.
59. X. Lin and D. Parikh. Don't Just Listen, Use Your Imagination: Leveraging Visual Common Sense for Non-Visual Tasks. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2015. **(Oral)**
60. M. Jas and D. Parikh. Image Specificity. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2015. **(Oral)**
61. R. Vedantam, C. L. Zitnick and D. Parikh. CIDEr: Consensus-based Image Description Evaluation. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2015.
62. A. Deza and D. Parikh. Understanding Image Virality. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2015.
63. M. Sakurada T. Yairi, Y. Nakajima, N. Nishimura, and D. Parikh. Semantic Classification of Spacecraft's Status: Integrating System Intelligence and Human Knowledge. *Proceedings of the 2015 IEEE International Conference on Semantic Computing (ICSC)*, 2015.

64. S. Antol, C. L. Zitnick and D. Parikh. Zero-Shot Learning via Visual Abstraction. *European Conference on Computer Vision (ECCV)*, 2014.
65. S. Lad and D. Parikh. Interactively Guiding Semi-Supervised Clustering via Attribute-based Explanations. *European Conference on Computer Vision (ECCV)*, 2014.
66. A. Bansal, A. Farhadi and D. Parikh. Towards Transparent Systems: Semantic Characterization of Failure Modes. *European Conference on Computer Vision (ECCV)*, 2014.
67. P. Zhang, J. Wang, A. Farhadi, M. Hebert and D. Parikh. Predicting Failures of Vision Systems. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2014.
68. G. Christie, A. Parkash, U. Krothapalli and D. Parikh. Predicting User Annoyance Using Visual Attributes. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2014.
69. D. Parikh. Visual Attributes for Enhanced Human-Machine Communication. *Allerton Conference on Communication, Control and Computing*, 2013. **(Invited Paper, Oral)**.
70. N. Turakhia and D. Parikh. Attribute Dominance: What Pops Out? *International Conference on Computer Vision (ICCV)*, 2013.
71. A. Sadovnik, A. C. Gallagher, D. Parikh and T. Chen. Spoken Attributes: Mixing Binary and Relative Attributes to Say the Right Thing. *International Conference on Computer Vision (ICCV)*, 2013.
72. D. Parikh and K. Grauman. Implied Feedback: Learning Nuances of User Behavior in Image Search. *International Conference on Computer Vision (ICCV)*, 2013.
73. C. L. Zitnick, D. Parikh and L. Vanderwende. Learning the Visual Interpretation of Sentences. *International Conference on Computer Vision (ICCV)*, 2013.
74. C. L. Zitnick and D. Parikh. Bringing Semantics Into Focus Using Visual Abstraction. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2013. **(Oral)**
75. R. Mottaghi, S. Fidler, J. Yao, R. Urtasun and D. Parikh. Analyzing Semantic Segmentation Using Hybrid Human-Machine CRFs. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2013.
76. A. Biswas and D. Parikh. Simultaneous Active Learning of Classifiers & Attributes via Relative Feedback. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2013.
77. M. Rastegari, A. Diba, D. Parikh and A. Farhadi. Multi-Attribute Queries: To Merge or Not to Merge? *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2013.
78. A. Parkash and D. Parikh. Attributes for Classifier Feedback. *European Conference on Computer Vision (ECCV)*, 2012 **(Oral)**.
79. D. Parikh, A. Kovashka, A. Parkash and K. Grauman. Relative Attributes for Enhanced Human-Machine Communication. Invited paper at *AAAI Conference on Artificial Intelligence*, 2012 **(Invited Paper, Oral)**.
80. C. Li, D. Parikh and T. Chen. Automatic Discovery of Groups of Objects for Scene Understanding. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2012.

81. A. Kovashka, D. Parikh and K. Grauman. WhittleSearch: Image Search with Relative Attribute Feedback. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2012.
82. K. Duan, D. Parikh, D. Crandall and K. Grauman. Discovering Localized Attributes for Fine-grained Recognition. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2012.
83. C. L. Zitnick and D. Parikh. The Role of Image Understanding in Contour Detection. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2012.
84. P. Isola, D. Parikh, A. Torralba and A. Oliva. Understanding the Intrinsic Memorability of Images. *Neural Information Processing Systems (NIPS)*, 2011.
85. D. Parikh and K. Grauman. Relative Attributes. *International Conference on Computer Vision (ICCV)*, 2011 **(Oral) Marr Prize (Best Paper Award) Winner**.
86. D. Parikh. Recognizing Jumbled Images: The Role of Local and Global Information in Image Classification. *International Conference on Computer Vision (ICCV)*, 2011.
87. C. Li, D. Parikh and T. Chen. Extracting Adaptive Contextual Cues from Unlabeled Regions. *International Conference on Computer Vision (ICCV)*, 2011.
88. D. Parikh and C. L. Zitnick. Finding The Weakest Link in Person Detectors. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2011.
89. D. Parikh and K. Grauman. Interactively Building a Discriminative Vocabulary of Nameable Attributes. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2011.
90. A. Gallagher, D. Batra and D. Parikh. Inference for Order Reduction in MRFs. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2011.
91. D. Parikh and C. L. Zitnick. The Role of Features, Algorithms and Data in Visual Recognition. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2010.
92. D. Batra, A. Gallagher, D. Parikh, T. Chen. Beyond Trees: MRF Inference via Outer-Planar Decomposition. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2010.
93. D. Batra, A. Kowdle, D. Parikh, J. Luo, T. Chen. iCoseg: Interactive Co-segmentation with Intelligent Scribble Guidance. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2010.
94. D. Batra, D. Parikh, A. Kowdle, T. Chen and J. Luo. Seed Image Selection in Interactive Cosegmentation. *IEEE International Conference on Image Processing (ICIP)*, 2009
95. D. Parikh, C. L. Zitnick and T. Chen. Unsupervised Learning of Hierarchical Spatial Structures in Images. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2009
96. C. Mao, H. Lee, D. Parikh, T. Chen and S. Huang. Semi-Supervised Cotraining and Active Learning based Approach for Multi-view Intrusion Detection. *ACM Symposium on Applied Computing (SAC)*, 2009.

97. D. Parikh, C. L. Zitnick and T. Chen. Determining Patch Saliency Using Low-Level Context. *European Conference on Computer Vision (ECCV)*, 2008.
98. D. Parikh, C. L. Zitnick and T. Chen. From Appearance to Context-Based Recognition: Dense Labeling in Small Images. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2008.
99. D. Parikh and T. Chen. Bringing Diverse Classifiers to Common Grounds: dtransform. *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2008.
100. D. Parikh and T. Chen. Unsupervised Identification of Multiple Objects of Interest from Multiple Images: dISCOVER. *Asian Conference on Computer Vision (ACCV)*, 2007.
101. D. Parikh and T. Chen. Hierarchical Semantics of Objects (hSOs). *IEEE International Conference on Computer Vision (ICCV)*, 2007.
102. R. Polikar, D. Parikh, and S. Mandayam. Multiple Classifiers System for Multisensor Data Fusion. *IEEE Sensors Applications Symposium*, 2006.
103. D. Parikh, N. Stepenosky, A. Topalis, D. Green, J. Kounios, C. Clark, and R. Polikar. Ensemble Based Data Fusion for Early Diagnosis of Alzheimer's Disease. *IEEE Proceedings of The Engineering in Medicine and Biology*, 2005.
104. D. Parikh, and R. Polikar. A Multiple Classifier Approach for Multisensor Data fusion. *IEEE Proceedings of Information Fusion*, 2005.
105. D. Parikh, M. Kim, J. Oagaro, S. Mandayam, and R. Polikar. Combining Classifiers for Multisensor Data Fusion. *IEEE Proceedings of Systems, Man and Cybernetics*, 2004.
106. D. Parikh, M. Kim, J. Oagaro, S. Mandayam, and R. Polikar. Ensemble of Classifiers Approach for NDT Data Fusion. *IEEE Proceedings of Ultrasonics, Ferroelectrics and Frequency Control*, 2004.
107. D. Parikh, Y. Mehta, and K. Jahan. Evaluate the Effect of Ground Tire Rubber on Laboratory Rutting Performance of Asphalt Concrete Mixtures. *Proceedings of Industrial and Hazardous Waste Conference*, 2002.

#### Peer Reviewed Workshop Papers

108. Y. Goyal, A. Mohapatra, D. Parikh and D. Batra. Towards Transparent AI Systems: Interpreting Visual Question Answering Models. *Workshop on Visualization for Deep Learning, International Conference on Machine Learning (ICML)*, 2016. **(Best student paper)**
109. A. Das, H. Agrawal, C. L. Zitnick, D. Parikh and D. Batra. Human Attention in Visual Question Answering: Do Humans and Deep Networks Look at the Same Regions? *Workshop on Visualization for Deep Learning, International Conference on Machine Learning (ICML)*, 2016. **(Best student paper)**
110. X. Lin, M. Cogswell, D. Parikh and D. Batra. Propose and Re-rank Semantic Segmentation via Deep Image Classification. *Big Vision workshop at IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2014.
111. A. Bansal, A. Kowdle, D. Parikh, A. Gallagher and C. L. Zitnick. Which Edges Matter? *Workshop on 3D Representation and Recognition (3dRR)*, in conjunction with the *International Conference on Computer Vision (ICCV)*, 2013.

- 112.D. Parikh, P. Isola, A. Torralba and A. Oliva. Understanding the Intrinsic Memorability of Images. *Vision Sciences Society (VSS)*, 2012.
- 113.D. Parikh and C. L. Zitnick. Human-Debugging of Machines. *Second Workshop on Computational Social Science and the Wisdom of Crowds at Neural Information Processing Systems (NIPS)*, 2011.
- 114.D. Parikh and K. Grauman. Interactive Discovery of Task-Specific Nameable Attributes. *First Workshop on Fine-Grained Visual Categorization (FGVC)*, held in conjunction with *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2011. **(Best Poster Award)**
- 115.D. Batra, A. Kowdle, D. Parikh and T. Chen. Cutout Search: Putting a Name to the Picture. *Workshop on Internet Vision, IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2009.
- 116.D. Parikh and G. Jancke. Localization and Segmentation of a 2D High Capacity Color Barcode. *Workshop on Applications in Computer Vision (WACV)*, 2008.
- 117.D. Parikh and T. Chen. Unsupervised Learning of Hierarchical Semantics of Objects (hSOs). *Beyond Patches Workshop, IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2007. **(Best Paper Award)**
- 118.D. Parikh and T. Chen. Classification-Error Cost Minimization Strategy: dCMS. *IEEE Statistical Signal Processing Workshop*, 2007.
- 119.D. Parikh, R. Sukthankar, T. Chen, and M. Chen. Feature-based Part Retrieval for Interactive 3D Reassembly. *IEEE Workshop on Applications of Computer Vision (WACV)*, 2007.

### Technical Reports

- 120.C. L. Zitnick and D. Parikh. Color Source Separation for Enhanced Pixel Manipulations. MSR-TR-2011-98, Microsoft Research, 2011.

### Demos

- 121.N. Agrawal, A. Biswas, A. Kovashka, K. Grauman and D. Parikh. Relative Attributes for Enhanced Human-Machine Communication. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2013. (patent pending)
- 122.D. Batra, A. Kowdle, K. Tang, D. Parikh, J. Luo and T. Chen. Interactive Cosegmentation by Touch. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2009.

### Patents

123. A. Kovashka, D. Parikh and K. Grauman. Efficient Identifying Images, Videos, Songs or Documents Most Relevant to the User Based on Attribute Feedback. Filed to USPTO.

## INVITED TALKS

### Agents that See, Talk, Act, and Reason

- Keynote at Winter Conference on Applications in Computer Vision (WACV) Waikoloa Village, Hawaii, January 2019

- Samsung Research America's AI Summit  
Mountain View, CA, January 2019
- Open Images Challenge Workshop  
European Conference on Computer Vision (ECCV)  
Munich, Germany, September 2018
- RE-WORK event for Women in AI  
San Francisco, CA, June 2018

### **Forcing Vision and Language Models to Not Just Talk But Also Actually See**

- VizWiz Grand Challenge: Answering Visual Questions from Blind People  
European Conference on Computer Vision (ECCV)  
Munich, Germany, September 2018
- Beyond Supervised Learning Workshop  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR)  
Salt Lake City, UT, June 2018

### **Generalization "Opportunities" in Visual Question Answering**

- Workshop on New Forms of Generalization in Deep Learning and Natural Language Processing  
Conference of the North American Chapter of the Association for Computational Linguistics (NAACL)  
New Orleans, LA, June 2018

### **AI for Accessing Visual Content via Natural Language**

- F8, Facebook's Annual Developer Conference  
San Jose, CA, May 2018

### **Embodied Question Answering**

- Workshop on Multi-modal Perception and Control  
Robotics: Science and Systems (R:SS)  
Pittsburgh, PA, June 2018
- Deep Vision Workshop  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR)  
Salt Lake City, UT, June 2018
- Indian Institute of Technology (IIT) Delhi  
Delhi, India, December 2017
- Indian Institute of Technology (IIT) Gandhinagar  
Gandhinagar, India, December 2017
- Workshop on Visually-Grounded Interaction and Language (ViGIL)  
Neural Information Processing Systems (NIPS)  
Long Beach, CA, December 2017

### **Learning by Playing**

- Workshop on the Role of Simulation in Computer Vision  
IEEE International Conference on Computer Vision (ICCV)  
Venice, Italy, October 2017
- Interactive Learning Workshop  
Simons Institute for the Theory of Computing  
Berkeley, CA, February 2017
- First Workshop on Object Understanding for Interaction  
International Conference on Computer Vision (ICCV) 2015  
Santiago, Chile, December 2015

### **VQA → Visual Dialog**

- Reinforcement Learning Summer School (RLSS)  
Montreal, Canada, July 2017

### **Visual Dialog**

- Facebook Faculty Summit  
New York, NY, October 2017
- 1st Workshop on Visual Understanding Across Modalities  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR)  
Honolulu, HI, July 2017

### **Towards Theory of AI's Mind**

- NVIDIA GTC (GPU Technology Conference)  
San Jose, CA, March 2018
- AAIL Human-AI Collaboration emerging topics track  
New Orleans, LA, February 2018
- Language and Vision Workshop  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR)  
Honolulu, HI, July 2017

### **Making the V in VQA Matter: Elevating the Role of Image Understanding in Visual Question Answering**

- Large-Scale Scene Understanding (LSUN) Challenge Workshop  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR)  
Honolulu, HI, July 2017
- Google  
Mountain View, CA, December 2016
- Mysore Vision, Language, and AI Workshop  
Mysore, India, December 2016

### **Learning Common Sense from Stories**

- Workshop on Storytelling with Images and Videos  
European Conference on Computer Vision (ECCV)



Amsterdam, Netherlands, October 2016

### **Learning Common Sense from Visual Abstractions**

- Workshop on Virtual/Augmented Reality for Visual Artificial Intelligence  
European Conference on Computer Vision (ECCV)  
Amsterdam, Netherlands, October 2016

### **Visual Question Answering (VQA)**

- AI With The Best  
Online conference, October 2017
- Zoox  
Menlo Park, CA, January 2017
- University of California, Berkeley  
Berkeley, CA, January 2017
- Workshop on Assistive Computer Vision and Robotics  
European Conference on Computer Vision (ECCV)  
Amsterdam, Netherlands, October 2016
- International Computer Vision Summer School (ICVSS)  
Sicily, Italy, July 2016
- Large Scale Visual Recognition and Retrieval: BigVision Workshop  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR)  
Las Vegas, NV, June 2016
- Closing the Loop Between Language and Vision Workshop  
International Conference on Computer Vision (ICCV) 2015  
Santiago, Chile, December 2015
- Women in Computer Vision (WiCV) Workshop  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR)  
Boston, MA, June 2015

### **Words, Pictures, and Common Sense**

- Embedded Vision Summit  
Santa Clara, CA, May 2018
- Facebook event for Women in AI  
Montreal, Canada, March 2018
- Language Technologies Institute (LTI) Colloquium at Carnegie Mellon University (CMU)  
Pittsburgh, PA, February 2018
- ML@GT (Machine Learning at Georgia Tech) Seminar  
Atlanta, GA, September 2017
- Computers and Thought Award (IJCAI)  
Melbourne, Australia, August 2017

- Keynote at the European Chapter of the Association for Computational Linguistics (EACL)  
Valencia, Spain, April 2017
- Sackler Forum on Machine Learning  
Washington, D.C., January 2017
- Georgia Institute of Technology  
Atlanta, GA, April 2016
- University of Texas at Austin  
Austin, TX, April 2016
- Toyota Technological Institute at Chicago (TTIC)  
Chicago, IL, April 2016
- Facebook AI Research  
Menlo Park, CA, March 2016
- Microsoft Research  
Redmond, WA, March 2016

#### **Interpretable Mid-level Representations for Image Search**

- eBay  
San Jose, CA, March 2017

#### **Reading Between The Lines & Visual Question Answering (VQA)**

- Second IEEE Workshop on Large Scale Visual Commerce (LSVisCom)  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR)  
Boston, MA, June 2015

#### **Words, Pictures, and Imagination**

- Baidu  
Sunnyvale, CA, August 2015
- Google  
Mountain View, CA, August 2015
- Dato  
Seattle, WA, August 2015
- University of Toronto  
Vision Seminar, Toronto, Canada, April 2015
- Carnegie Mellon University  
Vision and Autonomous Systems Center (VASC) Seminar, Pittsburgh, PA, April 2015

#### **Beyond Mindless Labeling: \*Really\* Leveraging Humans to Build Intelligent Machines**

- Indian Institute of Science  
Bangalore, India, December 2014
- Invited talk at workshop on Human Propelled Machine Learning

Neural Information Processing Systems (NIPS) 2014  
Montreal, Canada, December 2014

- University of Maryland  
Vision Seminar, College Park, MD, October 2014
- University of Oxford  
Oxford, UK, September 2014
- Microsoft Research  
Cambridge, UK, September 2014
- IBM T. J. Watson Research Center  
Yorktown Heights, NY, August 2014
- Workshop on Computer Vision and Human Computation  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2014  
Columbus, OH, June 2014
- Stanford Workshop on AI and Knowledge (SWANK)  
Stanford, CA, April 2014

#### **Enhancing Human-Machine Communication via Attributes**

- Allerton Conference on Communication, Control, and Computing  
Invited Session on Active Learning, Search and Visual Recognition, Monticello, IL, October 2013
- eBay Research  
San Jose, CA, August 2013
- Amazon  
Seattle, WA, July 2013
- University of Washington  
Recognition Reading Group, Seattle, WA, July 2013
- IST Austria  
Symposium on Computer Vision and Machine Learning, Klosterneuburg, Austria, Oct 2012
- Invited Talk at AAAI Conference on Artificial Intelligence  
Subarea Spotlights (Vision), Toronto, Canada, July 2012

#### **Advancing Computer Vision by Leveraging Humans**

- Virginia Tech  
ECE Graduate Seminar, Blacksburg, VA, November 2013
- Virginia Tech  
Center for Embedded Systems for Critical Applications (CESCA) Seminar, Blacksburg, VA,  
November 2013
- Carnegie Mellon University  
Vision and Autonomous Systems Center (VASC) Seminar, Pittsburgh, PA, May 2012
- Virginia Tech

Electrical and Computer Engineering Departmental Seminar, Blacksburg, VA, April 2012

- University of Massachusetts  
Computer Science Departmental Seminar, Amherst, MA, April 2012
- Rutgers University  
Electrical and Computer Engineering Departmental Seminar, New Brunswick, NJ, March 2012
- Boston University  
Electrical and Computer Engineering Seminar, Boston, MA March 2012
- University of Minnesota  
Computer Science and Engineering Colloquium, Minneapolis, MN, March 2012
- University of Washington  
Computer Science and Engineering Colloquium, Seattle, WA, February 2012
- Michigan State University  
Computer Science and Engineering Lecture Series, East Lansing, MI, February 2012
- Microsoft Research  
Adaptive and Interactive Systems Seminar, Redmond, WA, July 2010

#### **Human-Debugging of Machine Visual Recognition**

- University of California at Berkeley  
Berkeley, CA, January 2012
- University of California at Santa Barbara  
Computer Science and Electrical and Computer Engineering Colloquium, January 2012
- University of California at San Diego  
San Diego, CA, January 2012
- University of California at Irvine  
Irvine, CA, January 2012
- Cornell University  
AI Seminar, Ithaca, NY, October 2011
- Workshop on Human Interaction in Computer Vision (HICV)  
International Conference on Computer Vision (ICCV), Barcelona, Spain, November 2011
- University of Michigan  
Midwest Computer Vision Workshop, Ann Arbor, MI, May 2011
- Toyota Technological Institute Chicago (TTIC)  
Research at TTIC Seminar, Chicago, IL, January 2011
- Massachusetts Institute of Technology (MIT)  
Vision Seminar, Cambridge, MA, November 2010

#### **The Role of Features, Algorithms and Data in Visual Recognition**

- Microsoft Research

Vision Technology (VisTech) Seminar, Redmond, WA, July 2010

- Cornell University  
Advanced Multimedia Processing Laboratory, Ithaca, NY, April 2010

#### **The Role of Context in Image Understanding: When, For What, and How?**

- Georgia Institute of Technology  
Atlanta, GA, April 2010
- Toyota Technological Institute Chicago (TTIC)  
Chicago, IL, April 2009
- University of British Columbia  
Vancouver, Canada, April 2009
- California Institute of Technology  
Pasadena, CA, April 2009
- University of Texas at Austin  
Computer Science Colloquium, Austin, TX, April 2009
- Carnegie Mellon University  
Vision and Autonomous Systems Center (VASC) Seminar, Pittsburgh, PA, September 2009
- Microsoft Research  
Vision Technology (VisTech) Seminar, Redmond, WA, Summer 2008

#### **Other**

- Brown University  
Providence, RI, May 2011  
Richer Human-Machine Communication in Attributes-based Visual Recognition
- Toyota Technological Institute Chicago (TTIC)  
Research at TTIC, Chicago, IL, October 2009  
Research Overview
- Microsoft Research  
Vision Technology (VisTech) Seminar, Redmond, WA, Summer 2007  
Unsupervised Learning of Hierarchical Semantics of Objects (hSOs)

## **PROFESSIONAL ACTIVITIES**

### **Advisory Committee**

- International Joint Conference on Artificial Intelligence (IJCAI), 2018

### **Chair**

- Program Chair  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2021.

- Area Chair  
European Conference on Computer Vision (ECCV) 2018.
- Area Chair  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2018.
- Area Chair  
International Conference on Computer Vision (ICCV) 2017.
- Area Chair  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2017.
- Senior Program Committee Member  
AAAI Conference on Human Computation and Crowdsourcing (HCOMP) 2016.
- Area Chair  
European Conference on Computer Vision (ECCV) 2016
- Area Chair  
International Joint Conference on Artificial Intelligence (IJCAI) 2016.
- Poster Chair  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2016.
- Session Chair  
International Conference on Computer Vision (ICCV) 2015.
- Area Chair  
International Conference on Computer Vision (ICCV) 2015.
- Session Chair  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2015.
- Area Chair  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2015.
- Student Activities Co-Chair  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2015.
- Area Chair  
Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP) 2014.
- Spotlight Session Chair  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2013.
- Area Chair  
International Conference on Pattern Recognition (ICPR) 2012.

**Panelist**

- Sackler Forum Future of AI Event  
National Academy of Sciences and U.K. Royal Society  
Washington, D.C., February 2017
- National Science Foundation (NSF)

Information and Intelligent Systems (IIS) Division, 2016.

- National Science Foundation (NSF)  
Information and Intelligent Systems (IIS) Division, 2015.
- National Science Foundation (NSF)  
Information and Intelligent Systems (IIS) Division, 2011.

### **Organizer**

- Good Citizen Panel  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018
- 3<sup>rd</sup> VQA Challenge and Visual Dialog Workshop  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018
- Workshop on Visually-Grounded Interaction and Language (ViGIL)  
Neural Information Processing Systems (NIPS), 2017
- 2<sup>nd</sup> Workshop on Closing the Loop Between Vision and Language  
IEEE Conference on Computer Vision (ICCV), 2017
- 2<sup>nd</sup> Visual Question Answering Challenge Workshop  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2017
- Visual Question Answering Challenge Workshop  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2016
- Future Directions in Computer Vision  
Department of Defense workshop, 2015
- Third International Workshop on Parts and Attributes  
European Conference on Computer Vision (ECCV), 2014
- Human-Machine Communication for Visual Recognition and Search (HMCV)  
European Conference on Computer Vision (ECCV), 2014
- First Mid-Atlantic Computer Vision (MACV) workshop, 2014  
Held at Virginia Tech, Blacksburg, VA  
(~110 attendees)
- Tutorial on Attributes  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2013  
(~150 attendees)
- Workshop on Advancing Computer Vision with Humans in the Loop (ACVHL)  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2010  
(~100 attendees)

### **Associate Editor**

- Springer's Machine Vision & Applications (MVA) Journal
- Computer Vision & Image Understanding (CVIU) Journal

### **Reviewer for Journals**



- Transactions on Pattern Analysis and Machine Intelligence (PAMI)
- International Journal on Computer Vision (IJCV)
- Computer Vision and Image Understanding (CVIU)
- IEEE Transactions on Image Processing (TIP)
- Frontiers in Perception Science
- Transactions on Signal Processing (TSP)
- Neurocomputing (NEUCOM)
- IEEE Transactions on Systems, Man and Cybernetics (SMC)
- Journal of Visual Communication and Image representation (JVCI)
- IEEE Signal Processing Letters (SPL)
- IEEE Transactions on Information Forensics and Security (TIFS)
- EURASIP Journal on Advances in Signal Processing (JASP)

#### **Program Committee for Conferences**

- IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2009, 2010, 2011, 2012, 2013, 2014
- European Conference on Computer Vision (ECCV) 2010, 2012, 2014
- IEEE International Conference on Computer Vision (ICCV) 2009, 2011, 2013
- Neural Information Processing Systems (NIPS) 2010, 2012
- Association for the Advancement of Artificial Intelligence (AAAI) 2012
- IEEE International Conference on Image Processing (ICIP) 2009, 2010, 2011
- Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP) 2010
- CrowdConf 2010
- The Human Computation Workshop (HCOMP) 2012
- International Conference on Biometrics: Theory, Applications and Systems (BTAS) 2012
- ACM Symposium on User Interface Software and Technology (UIST) 2013

#### **Program Committee of Workshops**

- Workshop on Storytelling with Images and Videos (VisStory)  
European Conference on Computer Vision (ECCV), 2014

- Vision Meets Cognition Workshop  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2014
- Computational Models of Social Interactions and Behavior  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2014
- Large Scale Visual Commerce  
IEEE International Conference on Computer Vision (ICCV), 2013
- Understanding Human Activities: Context and Interactions  
IEEE International Conference on Computer Vision (ICCV), 2013
- Visual Analysis beyond Semantics (vABS)  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2013
- SUNw: Scene Understanding Workshop  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2013
- Fine Grained Visual Categorization Workshop  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2013
- Human Computation (HCOMP)  
Association for the Advancement of Artificial Intelligence (AAAI), 2012
- Parts and Attributes  
European Conference on Computer Vision (ECCV), 2012
- Web-scale Vision and Social Media  
European Conference on Computer Vision (ECCV), 2012

#### **Panelist at Workshops**

- Closing the Loop Between Language and Vision Workshop  
International Conference on Computer Vision (ICCV) 2015  
Santiago, Chile, December 2015
- Fine Grained Visual Categorization (FGVC)  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2011
- Visual Scene Understanding (ViSU)  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2009

#### **Member**

- Association for the Advancement of Artificial Intelligence (AAAI)
- Institute of Electrical and Electronics Engineers (IEEE)
- Society of Women Engineers (SWE)

#### **University Service**

- Faculty Search Committee, Bradley Department of Electrical and Computer Engineering, Virginia Tech (Fall 2015-Spring 2016)

- Faculty Search Committee, Computer Science Department, Virginia Tech (Fall 2014-Spring 2015)
- Faculty Advisory Committee (Fall 2013 – Spring 2016)
- Faculty Search Committee, Computer Science Department, Virginia Tech (Fall 2013-Spring 2014)
- Assistant Marshall at Graduation Commencement Ceremony, Fall 2013, Spring 2014

### **Outreach Activities**

- Partnered with the College of Engineering at Virginia Tech to obtain support from the university for a summer bridge program for the New Horizon Graduate Scholars – a diverse group of graduate students who are offered a variety of professional development opportunities – to help them transition from their undergraduate experiences to a research environment. Hosted participants in the lab for a seminar and opportunity to shadow graduate students.
- Mentor for Women in Computer Vision Workshop at the IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2015
- Mentor at the Doctoral Consortium at the IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2015
- Speaker at a College of Engineering Graduate Students Networking event on “Finding Your Passion and Building Your Research Agenda”, Spring 2015.
- Presented at a Center for the Enhancement of Engineering Diversity (CEED) Hypatia (female living learning community) First Year Seminar, Fall 2014.
- Interacted with and answered questions about my research from freshmen from the College of Engineering and College of Science at two Slush Rush events in College of Engineering’s residential community called inVenTs, Spring 2014, Fall 2014.
- Lab tours for CS/ECE Spring Mentoring Program, Event: “Technical Opportunities on Campus” for first year engineering female students, Spring 2014.
- Seminar and participation at two informal lunches, Fall 2013  
Student Transition Engineering Program (STEP): Center for the Enhancement of Engineering Diversity (CEED) summer bridge program for incoming engineering students
- Mentored an undergraduate student in a research project, Fall 2013  
Sciengineering program: an innovative undergraduate program at Virginia Tech focused on interdisciplinary research and academic study at the intersection of science, engineering and law

### **PRESS COVERAGE**

2018, Our work on teaching bots to navigate New York City using natural language was covered in MIT Technology Review, Forbes, Fast Company, New Scientist, TechCrunch, The Verge, and others.

- MIT Technology Review (<https://www.technologyreview.com/s/611629/facebooks-ai-tourist-finds-its-way-around-new-york-city-by-asking-for-help-from-another/>)
- Forbes (<https://www.forbes.com/sites/samshead/2018/07/12/facebook-aims-to-help-machines-understand-language-with-talk-the-walk-project/#388e4fe0c55d>)
- Fast Company (<https://www.fastcompany.com/90200229/facebook-taught-bots-to-navigate-new-york-city-using-natural-language>)
- New Scientist (<https://www.newscientist.com/article/2173918-facebooks-ai-tourist-learns-to-navigate-new-york-by-asking-directions/>)
- TechCrunch (<https://techcrunch.com/2018/07/11/facebooks-ai-researchers-task-tourist-bots-with-finding-their-way-in-nyc/>)
- The Verge (<https://www.theverge.com/2018/7/11/17560442/facebook-fair-ai-research-virtual-tourist-embodied-learning>)

2018, Our work on Embodied Question Answering (Embodied QA), a first step towards agents that can see, talk, and reason, was covered in MIT Technology Review, and others.

- MIT Technology Review (<https://www.technologyreview.com/s/611040/facebook-helped-create-an-ai-scammer-hunt-that-could-lead-to-the-first-useful-home-robots/>)

2017 50+ articles on our work on training AI bots to negotiate, including:

- CNN <http://money.cnn.com/2017/06/14/technology/future/facebook-chatbot-negotiate/index.html>
- Fast Company <https://www.fastcompany.com/40430548/bad-at-negotiating-facebook-is-working-on-bots-that-can-do-it-for-you>
- TechCrunch <https://techcrunch.com/2017/06/14/facebook-teaches-machines-to-negotiate-with-humans/>
- Quartz <https://qz.com/1004070/facebook-fb-built-an-ai-system-that-learned-to-lie-to-get-what-it-wants/>
- The Verge <https://www.theverge.com/2017/6/14/15799068/chatbot-negotiations-ai-facebook-fair>
- New Scientist <https://www.newscientist.com/article/mg23431304-300-chatbots-learn-how-to-drive-a-hard-bargain/>

2017 Forbes' list of 20 "Incredible Women Advancing A.I. Research"

- Forbes <https://www.forbes.com/sites/mariyayao/2017/05/18/meet-20-incredible-women-advancing-a-i-research/#2ffdbf8326f9>

2017 Featured news story about my Google Faculty Research Award and Dhruv Batra's Office of Naval Research (ONR) Young Investigator Program (YIP) award

- Georgia Tech's College of Computing (<http://www.cc.gatech.edu/news/588083/pair-ic-assistant-professors-earn-awards-research-visual-question-answering>)

2017 Featured news story about my Amazon Academic Research Award

- Georgia Tech's College of Computing (<http://www.cc.gatech.edu/news/586463/amazon-research-awards-fund-computer-vision-and-machine-learning-projects>)

2016 Our work on comparing where humans and machines look when answering questions about images

- MIT Technology Review (<https://www.technologyreview.com/s/601819/ai-is-learning-to-see-the-world-but-not-the-way-humans-do/>)
- New Scientist (<https://www.newscientist.com/article/2095616-robot-eyes-and-humans-fix-on-different-things-to-decode-a-scene/>)
- The Verge (<http://www.theverge.com/2016/7/12/12158238/first-click-deep-learning-algorithmic-black-boxes>)

2016 Dhruv Batra's and my interview on our Visual Question Answering (VQA) project

- WVTF/Radio IQ (<http://wvtf.org/post/giant-leap-machine-kind-when-robots-can-see>)
- 2016 Our work on understanding and predicting visual humor
- MIT Technology Review (<http://www.technologyreview.com/view/545316/ai-algorithm-identifies-humorous-pictures/>)
  - Newsweek (<http://www.newsweek.com/artificial-intelligence-algorithm-taught-recognise-humor-413832?rx=us>)
  - Virginia Tech's Bradley Department of Electrical and Computer Engineering (<https://www.ece.vt.edu/news/articles/coding-jokes-virginia-tech-research-team-tackles-the-algorithm-of-humor.html>)
- 2016 Featured news stories about my National Science Foundation (NSF) CAREER Award
- Virginia Tech's Bradley Department of Electrical and Computer Engineering (<https://www.ece.vt.edu/news/articles/parikh-wins-nsf-career-award.html>)
  - Virginia Tech's College of Engineering (<https://www.vtnews.vt.edu/articles/2016/02/022216-engineering-parikhnsfcareer.html>)
- 2015 Our work on Visual Question Answering (VQA) in "What's in This Picture? AI Becomes as Smart as a Toddler"
- Bloomberg Business (<http://www.bloomberg.com/news/articles/2015-05-22/what-s-in-this-picture-ai-becomes-as-smart-as-a-toddler>)
- 2014 Featured news stories about my Allen Distinguished Investigator Awards in Artificial Intelligence from the Paul G. Allen Family Foundation
- GeekWire (<http://www.geekwire.com/2014/paul-allen-gives-5-7m-cutting-edge-artificial-intelligence-researchers/>)
  - InTheCapital (<http://inthecapital.streetwise.co/2014/12/04/a-virginia-tech-professor-got-1m-to-improve-artificial-intelligence/>)
  - Gigaom (<https://gigaom.com/2014/12/03/allen-foundation-gives-millions-to-teach-machines-common-sense/>)
  - Virginia Tech (<http://www.vtnews.vt.edu/articles/2014/12/120414-ictas-paulallenaward.html>)
- 2014 "Can cartoons be used to teach machines to understand the visual world?"
- Newswise (<http://www.newswise.com/articles/view/623754/>)
  - AlphaGalileo (<http://www.alphagalileo.org/ViewItem.aspx?ItemId=145716&CultureCode=en>)
  - ECN (<http://www.ecnmag.com/news/2014/09/can-cartoons-be-used-teach-machines-understand-visual-world>)
  - EurekAlert ([http://www.eurekalert.org/pub\\_releases/2014-09/vt-ccb092614.php](http://www.eurekalert.org/pub_releases/2014-09/vt-ccb092614.php))
  - 4-traders (<http://www.4-traders.com/news/Can-cartoons-be-used-to-teach-machines-to-understand-the-visual-world--19159475/>)
- 2014 Featured news stories about my Google Faculty Research Award
- American Society for Engineering Education (ASEE) *Prism* November 2014 issue (<http://www.asee-prism.org/first-look-nov-2/>)
  - 4-traders (<http://www.4-traders.com/GOOGLE-INC-C-16118013/news/GOOGLE-C--Devi-Parikh-Receives-Innovative-Google-Faculty-Research-Award-19168358/>)
  - Virginia Tech (<http://www.vtnews.vt.edu/articles/2014/10/100914-engineering-parikhgoogleaward.html>)
  - Virginia Tech's College of Engineering (<https://www.eng.vt.edu/news/devi-parikh-receives-innovative-google-faculty-research-award>)
  - Virginia Tech's Bradley Department of Electrical and Computer Engineering (<http://www.ece.vt.edu/news/articles/Parikh-Google-Faculty-Award>)
- 2014 Featured news stories about my Army Research Office (ARO) Young Investigator Program (YIP) Award

- Virginia Tech (<http://www.vtnews.vt.edu/articles/2014/04/041714-engineering-deviparikharmyaward.html>)
- Virginia Tech's College of Engineering (<http://www.vtnews.vt.edu/articles/2014/04/041714-engineering-deviparikharmyaward.html>)
- Virginia Center for Autonomous System (<http://www.unmanned.vt.edu/news/2014/computer-vision-feedback.html>)

2013 Profile on my research

- Virginia Tech's Bradley Department of Electrical and Computer Engineering ([http://www.ece.vt.edu/news/ar13/crowdsourcing\\_computer\\_vision.php](http://www.ece.vt.edu/news/ar13/crowdsourcing_computer_vision.php))

## ADVISING ACTIVITY

### Current Graduate Advisees

- Samyak Datta  
Ph.D. student, Since Fall 2017
- Viraj Prabhu  
M.S. student, Since Fall 2017
- Prithvijit Chattopadhyay  
M.S. student, Since Fall 2017
- Arjun Chandrasekaran  
M.S. student, Since Spring 2015  
Ph.D. student, Since Spring 2016
- Jianwei Yang  
Ph.D. student, Since Fall 2015
- Jiasen Lu  
Ph.D. student, Since Fall 2015
- Ramprasaath Selvaraju  
Ph.D. student, Since Fall 2015
- Ramakrishna Vedantam  
M.S. student, Since Fall 2013  
Ph.D. student, Since Fall 2015

### Current Interns

- Karan Desai, IIT Roorkee  
Academic year 2018-2019
- Ayush Shrivastava, IIT BHU (Varanasi)  
Academic year 2018-2019
- Mohit Sharma, Purdue University  
Academic year 2018-2019

### Past Graduate Advisees

- Peng Zhang  
Ph.D. Fall 2017  
Now at Amazon
- Xiao Lin  
Ph.D. Fall 2017  
Now at SRI International
- Arijit Ray  
M.S. student, Spring 2017  
Now at SRI International
- Stanislaw Antol  
M.S. Spring 2014  
Now at Samsung Research America
- Shrenik Lad  
M.S. Spring 2015  
Now at Google
- Lisa Anders (co-advised)  
M.S. Spring 2014  
Thesis: Engineering Developments Towards a Robust Dielectrophoresis Cell Sorting Platform  
Now at Texas Instruments (TI)

**Past Graduate Interns**

- Varun Manjunatha, University of Maryland  
Summer 2015
- Ram Prasaath Selvaraju, BITS-Pilani Hyderabad  
Spring 2015
- Mayu Sakurada, University of Tokyo  
Fall 2014
- Mainak Jas, Aalto University  
Spring 2014
- Stanislaw Antol, Virginia Tech  
Fall 2013
- Xiao Lin, Virginia Tech  
Summer 2013
- Micah Hadosh, University of Illinois at Urbana Champaign (UIUC)  
Summer 2013
- Arijit Biswas, University of Maryland  
Spring 2012
- Roozbeh Mottaghi, University of California Los Angeles (UCLA)  
Spring 2012



- Kun Duan, Indiana University  
Summer 2011

### **Past Undergraduate Interns**

- Prithvijit Chattopadhyay, Delhi Technological University  
Summer 2015, Fall 2016-Spring 2017
- Tanmay Batra, IIT-Delhi  
Fall 2014-Spring 2015
- Franklin Zheng  
Since Spring 2014
- Rishabh Raj, IIIT Hyderabad  
Summer 2014
- Alexzander Williams, Virginia Tech  
Fall 2013 (Scieneering Program)
- Manuel Arturo Deza Figueroa, Universidad Nacional de Ingenieria, Peru  
Summer 2013
- Naman Agrawal, Indian Institute of Technology, Kharagpur  
Summer 2013
- Naman Turakhia, DA-IICT Gandhinagar  
Spring 2013
- Jiuling Wang, Zhejiang University  
Fall 2012, Undergraduate project: Spring 2013
- Aayush Bansal  
Spring 2012, 2013; Intern: Fall 2012
- Abhiram Nukalapati, University of Illinois at Urbana Champaign (UIUC)  
Fall 2011
- Amar Parkash, Indraprastha Institute of Information Technology, Delhi  
Summer 2011, Undergraduate project: Fall 2011, Spring 2012
- Yash Seth, Indraprastha Institute of Information Technology, Delhi  
Summer 2011, Undergraduate project: Fall 2011, Spring 2012