

# AISHWARYA AGRAWAL

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## EDUCATION

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- **Virginia Tech, Blacksburg, VA, USA** August 2014 - Present  
Ph.D., Computer Engineering  
GPA: 4.0/4.0, Advisor: Dhruv Batra
- **Indian Institute of Technology (IIT) Gandhinagar, India** May 2014  
Bachelor of Technology, Electrical Engineering; Minor, Computer Science and Engineering  
GPA: 9.42/10, B.Tech Project Advisor: Shanmuganathan Raman

## PUBLICATIONS

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- **A. Agrawal**, A. Kembhavi, D. Batra and D. Parikh. C-VQA: A Compositional Split of the Visual Question Answering (VQA) v1.0 Dataset. *CoRR*, abs/1704.08243, 2017.
- **A. Agrawal\***, J. Lu\*, S. Antol\*, M. Mitchell, C. L. Zitnick, D. Parikh and D. Batra. VQA: Visual Question Answering. In Special Issue on *Combined Image and Language Understanding, International Journal of Computer Vision (IJCV)*, 2016.
- **A. Agrawal**, D. Batra and D. Parikh. Analyzing the Behavior of Visual Question Answering Models. In *Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2016.
- C. L. Zitnick, **A. Agrawal**, S. Antol, M. Mitchell, D. Batra and D. Parikh. Measuring Machine Intelligence Through Visual Question Answering. In *AI Magazine*, 2016.
- G. Christie\*, A. Laddha\*, **A. Agrawal**, S. Antol, Y. Goyal, K. Kochersberger and D. Batra. Resolving Language and Vision Ambiguities Together: Joint Segmentation & Prepositional Attachment Resolution in Captioned Scenes. In *Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2016.
- T. Huang, F. Ferraro, N. Mostafazadeh, I. Misra, **A. Agrawal**, J. Devlin, R. Girshick, X. He, P. Kohli, D. Batra, C.L. Zitnick, D. Parikh, L. Vanderwende, M. Galley and M. Mitchell. Visual Storytelling. In *North American Chapter of the Association for Computational Linguistics (NAACL)*, 2016.
- S. Antol\*, **A. Agrawal\***, J. Lu, M. Mitchell, D. Batra, C. L. Zitnick and D. Parikh. VQA: Visual Question Answering. In *International Conference on Computer Vision (ICCV)*, 2015.
- **A. Agrawal** and S. Raman. A Novel LBP Based Operator for Tone Mapping HDR Images. In *International Conference on Signal Processing and Communications (SPCOM-2014) and IEEE Xplore*, 2014.
- R. Das, **A. Agrawal**, M. Upton and E.J. Seibel. Optically clearing tissue as an initial step for 3D imaging of core biopsies to diagnose pancreatic cancer. In *SPIE BiOS*, pp. 89410N-89410N. International Society for Optics and Photonics, 2014.

## TALKS

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- Analyzing the Behavior of Deep Visual Question Answering Models. *Deep Learning Summer School*, 2016. Montreal, Canada. [Video]
- Overview of challenge, winner announcements, analysis of results. *VQA Challenge Workshop* ([http://www.visualqa.org/vqa\\_v1\\_workshop.html](http://www.visualqa.org/vqa_v1_workshop.html)), CVPR 2016. Las Vegas, USA. [Video]
- VQA: Visual Question Answering. *GPU Technology Conference (GTC)*, 2016. San Jose, USA. [Video]

## RESEARCH INTERNSHIPS

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- **Allen Institute for Artificial Intelligence, Seattle** (Mentor: Aniruddha Kembhavi) Spring 2017
- Proposed a new setting for VQA and created a new split of the VQA v1.0 dataset – Visual Question Answering under Changing Priors v1.0 (VQA-CP v1.0)
- Evaluated the performance of existing VQA models on VQA-CP v1.0.

- Developed Grounded VQA (GVQA) – a novel model that outperforms existing VQA models on VQA-CP v1.0.

**Microsoft Research, Redmond** (Mentor: C. Lawrence Zitnick) Summer 2015

- Played an active role in releasing the VQA dataset to the public. Developed and released the VQA API and evaluation code (<https://github.com/VT-vision-lab/VQA>).
- Implemented Deep Structured Semantic Model (DSSM) based initial approaches to solve VQA.
- Trained and tested DSSM models for image sequences and stories, for an ongoing project (Visual Storytelling) at MSR.

**University of Washington, Seattle** (Mentor: Eric Seibel) Summer 2013

- Conducted an investigation comparing degree of optical clearance in pancreatic tissue using glycerol and FocusClear against formalin control.
- Implemented filtered backprojection algorithm for 3D reconstruction of OPTM images using MATLAB and VolView.

**IIT Gandhinagar** (Mentor: Ragavan K.) Summer 2012

- Programmed FPGA in Verilog to generate firing pulses for SCRs of the rectifier for open loop speed control of DC motor.
- Developed Verilog code for automatic regulation of SCR's firing angle for closed loop speed control of DC motor.

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#### PROFESSIONAL AND ACADEMIC ACTIVITIES

- Lead Organizer, VQA Challenge Workshop @ CVPR 2016 and CVPR 2017
- Co-lead Organizer, VQA Challenge 2017
- Lead Organizer, VQA Challenge 2016
- Reviewer, CVPR 2016, ECCV 2016, IJCV 2017, ICLR 2017, CVPR 2017, ICCV 2017, NIPS 2017
- Graduate Teaching Assistant (Virginia Tech) Fall 2014, Spring 2015  
Course: Introduction to Data Structures and Algorithms
- Teaching Assistant (IIT Gandhinagar) Fall 2013  
Course: Computing (Python and C)

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#### HONORS AND AWARDS

- Travel award, Women in Computer Vision Workshop, CVPR 2017
- Finalist, Microsoft Research PhD Fellowship 2017
- Finalist, Adobe Research PhD Fellowship 2017
- Travel award, Women in Machine Learning Workshop, NIPS 2016
- Best Poster award, Object Understanding for Interaction Workshop, ICCV 2015
- Travel award, Women in Computer Vision Workshop, CVPR 2015
- Institute Silver Medal, IIT Gandhinagar 2014  
(Awarded for second highest cumulative performance index in the batch (~45 students))
- Scholarship for academic excellence, IIT Gandhinagar 2011, 2012  
(Awarded to branch topper – 1 out of ~45 students)
- Dean's List for academic excellence, IIT Gandhinagar 2011, 2012, 2013, 2014
- Among top 0.76% of students in the IIT-JEE examination 2010  
(Out of ~0.4 million students who appeared for the examination)

## COURSEWORK

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- **Graduate Coursework:** Computer Vision, Numerical Analysis and Software, Introduction to Machine Learning, Introduction to Artificial Intelligence, Deep Learning for Perception, Advanced Computer Vision, Data Analytics
- **Undergraduate Coursework:** 3D Computer Vision, Digital Image Processing, Fundamentals of Artificial Neural Networks, Algorithms: Analysis and Design, Markov Chains and Queueing Models, Introduction to Computational Complexity Theory, Discrete Mathematics, Probability and Random Processes, Linear Algebra, Differential Equations, Complex Analysis

## SKILLS

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- **Programming Languages:** C, Python, MATLAB
- **Libraries:** Torch
- **Human Computation:** Amazon Mechanical Turk

## SIGNIFICANT ACTIVITIES

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- Captain, Women's Badminton Team, IIT Gandhinagar 2012-2013
- Joint-Organizer, Badminton Tournament, IIT Gandhinagar Sports Festival March 2012
- Runners up, Mechanical Model Competition, IIT Gandhinagar March 2011