

# Arijit Ray

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## Interests

### CODING SKILLS

Teaching computers how to see (vision), hear (audio), read (language), and think (machine/deep learning).

## Education

<b>Strong:</b> Python, PyTorch, Keras, TensorFlow, Flask	2021-Present	<b>Ph.D., Computer Science</b> <i>Computer Vision, NLP, Deep Learning, Social Media Analysis (jointly with UC Berkeley)</i> Advisor: Prof. Kate Saenko, Prof. Bryan Plummer.	<b>Boston University</b>
	2015-2017	<b>M.S., Computer Engineering</b> <i>Computer Vision, NLP</i> Advisor: Prof. Devi Parikh.	<b>Virginia Polytechnic Institute and State University</b>
<b>Medium:</b> HTML/CSS, JavaScript	2011-2015	<b>B.Tech., Electrical and Electronics Engineering</b> <b>GPA: 9.05/10</b> , First-Class Distinction, Received Academic Merit Scholarship, Advisor: Prof. N. Chellammal	<b>SRM University, India</b>

## Recent Positions

Fall 2022	<b>Visiting Student, AI for Impact Venture Studio, MIT Media Lab</b> Venture studio for formulating high impact application areas for AI and blockchain
May'22 - Aug'22	<b>Research Scientist Intern, Meta (Facebook) AI</b> FAIR Accel Perception and Action Team
Sep'21 - Present	<b>Research Fellow, Boston University</b> Profs. Kate Saenko and Bryan Plummer, Image and Video Computing Lab
May'17 - June'21	<b>Computer Scientist, SRI (formerly, Stanford Research Institute) International</b> Center for Vision Technologies
May'16 - Aug'16	<b>Deep Learning Intern, Blue River Technology</b> Startup acquired by John Deere
Apr'16 - May'17	<b>Graduate Research Assistant, Virginia Tech</b> Prof. Devi Parikh, Computer Vision Lab

## Selected Awards

Spring 2019	<b>SRI CVT Shark Tank Award</b> Won a competitive grant that supported my <a href="#">project on user-specific content generation in social media</a>
Summer 2016	<b>Employee of the Fortnight</b> Helped develop weed detection models @ Blue River Technology that was a key selling point for acquisition by John Deere for 305 million USD
Spring 2013	<b>Silver Medal, Research Day Award</b> Presented white paper on electro-mechanical exoskeleton construction, SRM University
Fall 2012	<b>Academic Merit Scholarship</b> SRM University, top 1% of students in department

## Selected Publications

Kamran Alipour, Arijit Ray, Xiao Lin, Michael Cogswell, Jurgen Schulze, Yi Yao, Giedrius Burachas, “**Improving Users' Mental Model with Attention-directed Counterfactual Edits**”, *Applied AI Letters* 2021, Wiley.

Arijit Ray, Michael Cogswell, Xiao Lin, Kamran Alipour, Ajay Divakaran, Yi Yao, Giedrius Burachas, “**Generating and Evaluating Explanations of Attended and Error-Inducing Input Regions for VQA Models**”, *Applied AI Letters* 2021, Wiley.

Arijit Ray, Karan Sikka, Ajay Divakaran, Stefan Lee, Giedrius Burachas, “**Sunny and Dark Outside?! Improving Answer Consistency in VQA through Entailed Question Generation**”, Conference on Empirical Methods in Natural Language Processing (**EMNLP 2019**), Hong Kong, also at VQA/Visual Dialog Workshop CVPR 2019 (**CVPR-W 2019**).

Arijit Ray, Yi Yao, Rakesh Kumar, Ajay Divakaran, Giedrius Burachas, “**Can You Explain That? Lucid Explanations Help Human-AI Collaborative Image Retrieval**”, AAAI Conference on Human Computation and Crowdsourcing (**AAAI-HCOMP 2019**), Skamania Lodge, Washington, also as **CVPR 2019** Demo.

Arijit Ray, Giedrius T. Burachas, Karan Sikka, Anirban Roy, Avi Ziskind, Yi Yao, Ajay Divakaran, “**Make Up Your Mind: Towards Consistent Answer Predictions in VQA Models**”, Shortcomings in Vision and Language Workshop, European Conference on Computer Vision (**ECCV-W 2018**), München, Germany

Shalini Ghosh, Giedrius Burachas, Arijit Ray, and Avi Ziskind, “**Generating Natural Language Explanations for Visual Question Answering using Scene Graphs and Visual Attention**”, IJCAI/ECAI Workshop on Explainable Artificial Intelligence (**IJCAI-W 2018**), Stockholm, Sweden

Arijit Ray, “**The Art of Deep Connection - Towards Natural and Pragmatic Conversational Agent Interactions**”, Master's Thesis, 2017, Virginia Tech, <https://vtechworks.lib.vt.edu/handle/10919/78335>

Arijit Ray, Gordon Christie, Mohit Bansal, Dhruv Batra, Devi Parikh, “**Question Relevance in VQA: Identifying Non-Visual and False-Premise Questions**”, Conference on Empirical Methods in Natural Language Processing (**EMNLP 2016**), Austin, Texas.

Prashant Chandrasekar, Xuan Zhang, Saurabh Chakravarty, Arijit Ray, John Krulick, and Alla Rozovskaya, “**The Virginia Tech System at CoNLL-2016 Shared Task on Shallow Discourse Parsing**”, (**ACL-CoNLL 2016**) p. 115.

## Selected Projects

- Sep'21 - Present    **DARPA SemaFor - UC Berkeley/BU Team**  
Generating evidence and detecting AI-generated media.
- Mar'19 - Dec'19    **SRI CVT SharkTank - PERSUADE - Personalized User-specific Ad Enhancement**  
Generating images that are more likely to persuade a user on a topic by leveraging their related interests. [\[Link\]](https://shorturl.at/oMOR8) [shorturl.at/oMOR8](https://shorturl.at/oMOR8)
- Jun'17 - Jun'21    **DARPA Explainable AI (XAI) - SRI/UToronto/UCSD Team**  
Improving the explainability and consistency of VQA models.
- Spring 2013        **ABU Asia-Pacific ROBOCON - SRM University Team**  
Developing high speed traction control for autonomous robots for a robotic competition

## Press Coverage

- Spring 2019        **TechXplore, Phys.org**  
An image-guessing game to evaluate the helpfulness of machine explanations, presented as a CVPR 2019 Demo and HCOMP 2019 Poster
- Fall 2014          **Indian Express, Deccan Chronicle, Engineering.Careers360**  
UAV with Facial Recognition Capabilities for SOS Help and Surveillance

## Miscellanea

### Selected Talks:

April 2021	<b>DARPA XAI PI Meeting</b> Presented our work on Error Maps and how to automatically evaluate heatmap explanations in Visual Question Answering systems.
December 2018	<b>SRI-CVT Shark Tank Presentation</b> Won runner's up at a Shark Tank presentation on generating user-specific persuasive images and text.
May 2017	<b>Mid-Atlantic Computer Vision (MACV) Workshop @ UPenn</b> Guess what? The Visual Twenty Questions Game

### Leadership

Founder	<b>AI+x of BU and Harvard</b> Graduate student symposium and workshop investigating how AI can address pressing challenges in contemporary research	2021-Present
Publicity Chair	<b>Boston University AI Research (AIR) Group</b>	2021
Vice President	<b>Tau Beta Pi, Virginia Beta Chapter</b>	2016-2017

### Service:

Reviewing	<b>Neurips 2022, COLING 2022, ACM Multimedia 2021, CVPR 2016</b>
Mentoring	<b>Judge (2017, 2021), Blue Ridge Highlands Regional Science Fair, VA</b>

### Selected Early Achievements/Awards:

2011	<b>Near Perfect Mathematics Score, All India Central Board Examinations</b> 97/100, Top <0.1% (99.9%ile) students in India	12th Grade
2007	<b>National Science Olympiad</b> All India Rank: 168, City Rank: 7, School Rank: 2 . Maintained a national rank < 1000 in National Science Olympiads 2008, 2009, 2010	
2006	<b>Founded Research Society in Middle School</b> Goal of encouraging middle-school students take an interest in science. Won accolades in multiple school/city level exhibitions.	