Arijit Ray

arijit.ray93@gmail.com, https://arijitray1993.github.io/

CODING SKILLS
Strong: Python, PyTorch, Keras, TensorFlow, Flask
Medium: HTML/CSS, JavaScript,
Novice: Java, C/C++, Caffe

Interests

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

Education

2021-Present — **Ph.D., Computer Science** — **Boston University**
Concentration on Computer Vision, NLP and Deep Learning
Advisor: Prof. Kate Saenko, Prof. Bryan Plummer.

2015-2017 — **M.S. (Thesis), Computer Engineering** — **Virginia Tech**
GPA: 3.96 / 4.00, *Concentration on Computer Vision and Machine Learning*
Advisor: Prof. Devi Parikh, Prof. Dhruv Batra, Prof. Jia-Bin Huang

2011–2015 — **B.Tech. (Thesis), Electrical and Electronics Engineering** — **SRM University**
GPA: 9.05/10, *summa cum laude* (First-Class Distinction),
Received Academic Merit Scholarship, Advisor: Prof. N. Chellammal

Positions Held

May'17 - June'21 — **Computer Scientist**
Center for Vision Technologies, SRI International (formerly, Stanford Research Institute)

May'16 - Aug'16 — **Deep Learning Intern**
Blue River Technology (now acquired by John Deere), Sunnyvale, CA

Apr'16 - May'17 — **Graduate Research Assistant**
Prof. Devi Parikh, Computer Vision Lab, Virginia Tech

Summer 2014 — **Undergraduate Research Intern**
Detecting Sarcasm for Sentiment Analysis using Intuitive Attributes, Prof. Elango Sivasankar, NIT Trichy

Summer 2012 — **Undergraduate Research Intern**
Programming a PID controller for High Frequency RF Cavity in Cyclotrons, Variable Energy Cyclotron Center, Kolkata

Selected Awards

Fall 2021 — **PhD Fellowship, Boston University**
5-year funding for pursuing a Ph.D. in Computer Science.

Spring 2019 — **SRI CVT Shark Tank Award**
Won an internal grant for a project on user-specific persuasive/memorable content generation in social media

Summer 2016 — **Employee of the Fortnight**
Helped develop weed detection models @ Blue River Technology that led to acquisition by John Deere

Spring 2013 **Silver Medal, Research Day Award**
Presented a white paper on an Electro-Mechanical Exoskeleton construction, SRM University

Fall 2012 **Academic Merit Scholarship**
SRM University, for excellent academic performance, top 1% of students in department

Selected Publications

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 (**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

Arijit Ray, Yi Yao, Avi Ziskind, Rakesh Kumar, Giedrius Burachas, "**Evaluating Visual-Semantic Explanations using a Collaborative Image Guessing Game**", VQA/Visual Dialog Workshop, Computer Vision and Pattern Recognition Conference (**CVPR-W 2018**), Salt Lake City, Utah

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.

Arijit Ray, Kishan Prudhvi Guddanti, and N. Chellammal. "**An Approach to Intelligent Traction Control Using Regression Networks and Anomaly Detection.**", Undergraduate Junior (3rd year) Project, Applied Artificial Intelligence 29.6 (2015): 597-616.

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

Selected Projects

March 2019 **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.

Fall 2017 **DARPA Explainable AI (XAI) - Deep Attentional Representations for Explanations (DARE)**
Improving the explainability and consistency of VQA models, attention and error map representations, understanding how humans interpret explanations and how it affect human-machine collaboration

Fall 2016 **Make RBF Networks Fast Again- Exploiting Multi-Threaded Computing to Speed Up RBF Networks**
Class project on implementing concurrent versions of RBF layers to integrate them into the TensorFlow package.

Spring 2016 **Identifying Explicit Connectives: CoNLL 2016 Shared Task on Discourse Parsing**
Identifying explicit connectives in a sentence, the first module in the pipeline of discourse parsing. Within **top 10** *submissions in CoNLL 2016.*

Fall 2015 **Online Demo for Predicting Plausibility of Common Sense Assertions**
Semester project on setting up a demo for predicting plausibility score of entered tuple using visual and textual common sense.

Fall 2015 **Object Prediction using Image Context**
Class project on predicting plausible objects for enhancing abstract scenes based on visual common sense.

Fall 2015 **Matching Cover Songs with the Original Ones**
Class project on matching cover songs to original ones using an ensemble of machine learning techniques

Fall 2013 **SRM Nano-Satellite Power Subsystems**
Responsible for the development of schematics for the power subsystem in the SRM University nano-satellite.

Spring 2013 **ABU Asia-Pacific ROBOCON**
Developed high speed traction control for autonomous robots for a robotic competition

Miscellanea

Selected Talks:

April 2021 **DARPA XAI PI Meeting**
Presented our work on Error Maps and how to automatically evaluate heatmap explanations in Visual Question Answering systems.

December 2018 **SRI Shark Tank Presentation** Center for Vision Technologies
Won runner's up at a Shark Tank presentation on generating user-specific persuasive images and text.

May 2017 **Mid-Atlantic Computer Vision (MACV) Workshop** University of Pennsylvania
Guess what? The Visual Twenty Questions Game

Spring 2013 **Defense Research and Development Organization** Hyderabad, India
Standardized Power Systems of Nano-Satellites

Community Service:

June 2021 — **Served as reviewer for ACM Multimedia 2021** — ACMMM 2021
Served as an emergency reviewer

Sep 2019 — **Invited to be a mentor at AAAI-HCOMP 2019 Doctoral Consortium** — HCOMP 2019

2017, 2021 — **Judge for Blue Ridge Highlands Regional Science Fair** — Radford University
Served as a judge for high school and middle school science project competitions.

Fall 2015 — **CVPR 2016 Reviewer**
Served as an emergency reviewer for the Computer Vision and Pattern Recognition Conference 2016

Non-technical:

Aug 2021 — **Dance Contest** — Prohibition Productions
Won Second Prize at at Swing Under the Stars Dance Contest in NYC.

May 2021 — **American Sailing Association 101 Certification**
American Sailing Association 101 certification for basic keelboat sailing

Jan 2020 — **Dance Performance** — YSBD New York
1920's Shag and Charleston Choreo at the Winter Bash at You Should Be Dancing, New York with Project Connect, a non-profit that performs dance shows for under-served communities

August 2019 — **Rock Band Performance** — Hopewell Theater
Played lead guitar at Hopewell, NJ as a part of the School of Rock Band.

July 2019 — **SRI Summer Music Festival** — SRI International
Played guitar at the SRI Summer Music Fest as a part of the SRI CVT Music Band.

Selected Childhood Achievements/Awards:

2011 — **Near Perfect Mathematics Score, All India Central Board Examinations** — 12th Grade
97/100, Top <0.1% (99.9%ile) students in India

2008 — **First Prize, Biennial School Science Exhibition, Breakthrough Science Society**
Homemade Solar Battery and other green energy gadgets, 8th Grade Science Fair

2007 — **National Science Olympiad**
All India Rank: 168, City Rank: 7, School Rank: 2 . Maintained a national rank < 1000 in National Science Olympiads 2008, 2009, 2010

2006 — **Opened an informal research society in middle school**
Goal of encouraging middle-school students take an interest in science. Won accolades in school/city level exhibitions.