Arijit Ray

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https://cs-people.bu.edu/array/

Goal

To teach machines to see (vision), read/hear (language), think (deep learning), and create (generation).

Appointments

Fall'23	**Teaching Fellow**, Boston University *Designing and teaching CS 541, Applied Machine Learning.*
Summer'23	**AI Resident**, Mineral, Alphabet (Google) X *Adapted multimodal language models for personalized object localization.*
Summer'22	**Research Scientist Intern**, Meta (Facebook) AI (FAIR) *Developed a benchmark to explore design choices for compositional reasoning in large vision-language models.*
Fall'21 - ?	**Research Fellow**, Boston University *Partly funded by DARPA Semantic Forensics with University of California, Berkeley.*
2017 - 2021	**Computer Scientist**, SRI International *Developed models that can rationalize for DARPA Explainable AI Program.*
Summer'16	**Deep Learning Intern**, Blue River Technology *Developed plant detection - a key selling point leading to John Deere acquisition for* $305M$.
2016 - 2017	**Graduate Research Assistant**, Virginia Tech *Advised by Prof. Devi Parikh.*

Education

2021 – ?	**Ph.D., Boston University**, Computer Science *Teaching machines to compositionally reason about vision, language, and action. Advised by Kate Saenko, Bryan Plummer, and Ranjay Krishna (University of Washington).*
2022 – ?	**Visiting Student, MIT**, AIForImpact Venture Studio, Media Lab *Formulating how vision-language AI can impact various verticals.*
2015 – 2017	**M.S., Virginia Polytechnic Institute and State University**, Computer Engineering Thesis: *Developing models that can converse with humans, advised by Devi Parikh.*
2011 – 2015	**B.Tech., SRM University, India**, Electrical Engineering *GPA:* $9.05/10$*, First-Class Distinction. Received Academic Merit Scholarship.*

Research Publications

Peer-reviewed Conferences

1. **A. Ray**, F. Radenovic, A. Dubey, B. A. Plummer, R. Krishna, and K. Saenko, "Cola: How to adapt vision-language models to compose objects localized with attributes?" *in submission*, 2023.
2. R. Tan, **A. Ray**, A. Burns, *et al.*, "Language-guided audio-visual source separation via trimodal consistency," *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, pp. 10 575–10 584, 2023.
3. K. Alipour, **A. Ray**, X. Lin, *et al.*, "Improving users' mental model with attention-directed counterfactual edits," *Applied AI Letters*, vol. 2, no. 4, e47, 2021.

4. **A. Ray**, M. Cogswell, X. Lin, *et al.*, "Generating and evaluating explanations of attended and error-inducing input regions for vqa models," *Applied AI Letters*, vol. 2, no. 4, e51, 2021.
5. K. Alipour, **A. Ray**, X. Lin, J. P. Schulze, Y. Yao, and G. T. Burachas, "The impact of explanations on ai competency prediction in vqa," *2020 IEEE International Conference on Humanized Computing and Communication with Artificial Intelligence (HCCAI)*, pp. 25–32, 2020.
6. **A. Ray**, K. Sikka, A. Divakaran, S. Lee, and G. Burachas, "Sunny and dark outside?! improving answer consistency in vqa through entailed question generation," *Proceedings of the 2019 Conference on Empirical Methods in Natural Language Processing (EMNLP)*, pp. 5860–5865, 2019.
7. **A. Ray**, Y. Yao, R. Kumar, A. Divakaran, and G. Burachas, "Can you explain that? lucid explanations help human-ai collaborative image retrieval," *Proceedings of the AAAI Conference on Human Computation and Crowdsourcing*, vol. 7, no. 1, pp. 153–161, 2019.
8. **A. Ray**, G. Christie, M. Bansal, D. Batra, and D. Parikh, "Question relevance in vqa: Identifying non-visual and false-premise questions," *Proceedings of the 2019 Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2016.

Workshops

1. **A. Ray**, K. Deng, R. Tan, S. Gabriel, B. Plummer, and K. Saenko, *Socratis: Are large multimodal models emotionally aware?* ICCV Worskshop on Emotionally and Culturally Aware AI, 2023.
2. S. Ghosh, G. Burachas, **A. Ray**, and A. Ziskind, *Generating natural language explanations for visual question answering using scene graphs and visual attention*, IJCAI/ECAI Workshop on Explainable Artificial Intelligence, XAI 2018, 2018.

Patents

1. G. Burachas, **A. Ray**, and Y. Yao, *Attention-based explanations for artificial intelligence behavior*, US Patent 10,909,401, Feb. 2021.
2. A. Divakaran, K. Sikka, **A. Ray**, X. Lin, and Y. Yao, *User targeted content generation using multimodal embeddings*, US Patent App. 17/191,698, Sep. 2021.

Awards

2019 **Shark Tank Award**, SRI International, Center for Vision Technologies.
Received $50,000 *for* 6 *months that supported my project on generating personalized content. Awarded to 3 projects in the center.*

2016 **Employee of the Fortnight**, Blue River Technology.
Only intern to win this award for developing a plant detection model in half the summer, a key selling point for the company.

2013 **Silver Medal**, Research Day, SRM University.
For designing a white paper on an exoskeleton suit. Rank 2 *out of* ~300 *students in the department.*

2012 **Academic Merit Scholarship**, SRM University.
Rank 3 *out of* ~300 *students in the Electrical Engineering Department.*

Mentoring

2023 –	Xavier Thomas (Boston University) Gitika Jha (Boston University) Jiayi Shen (Boston University) Katherine Deng (Boston University)
2022	Praneeth Chandra Bogineni (Boston University; now at a startup, Oplus.ai)
2020-2021	Kamran Alipour (University of California, San Diego; now at Williams Sonoma)
2019	Julia Kruk (SRI International; now MS student at Georgia Tech)

Leadership

Spring'23	**Student Leadership**, AI For Impact Venture Studio, MIT Media Lab *Part of the student leadership council organizing brainstorming events with over 100 attendees from 3 schools in the Boston area.*
2021 – 2022	**Co-founder**, AI+X of BU and Harvard *Graduate student workshop investigating how AI can address pressing challenges in contemporary research areas.*
2021 – 2023	**Publicity Chair**, Boston University
2016 – 2017	**Vice President**, Tau Beta Pi Engineering Honor Society *Vice President of the Virginia Tech Chapter*

Professional Service

2016 – ?	**Reviewer** *EMNLP'23, Neurips'23, Neurips'22, COLING'22, ACM Multimedia 2021, CVPR 2016.*
2022, 2017	**Judge**, Blue Ridge Highlands Regional Science Fair *Science fair for high-school students*

Media

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.*
2014	**Indian Express, Deccan Chronicle, Engineering.Careers360** *Designing an Unmanned Autonomous Drone for delivering help to disaster victims*

Early Achievements

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