PRITHVIJIT CHATTOPADHYAY

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RESEARCH INTERESTS

Out-of-Distribution Generalization, Robust Machine Learning

EDUCATION

Ph.D. in Computer Science, School of Interactive Computing, Georgia Tech   2019-Present
    Advisor: Prof. Judy Hoffman
    Award: Rising Star Doctoral Student Research Award

M.S. in Computer Science, College of Computing, Georgia Tech   2017-2019
    Thesis: Evaluating Visual Conversational Agents via Cooperative Human-AI Games
    Advisor: Prof. Devi Parikh
    Award: M.S. Research Award

B.Tech. in Electrical Engineering, Delhi Technological University (Formerly DCE)   2012-2016

SELECTED RESEARCH EXPERIENCE

Research Assistant, Hoffman Group, Georgia Tech   2019-Present
Advised by Prof. Judy Hoffman   Atlanta, GA
Working on out of distribution generalization problems in computer vision
- Sim2Real Generalization [Preprint]
- Embodied Robustness Benchmark [Paper]
- Interpreting Adversarial Robustness [Paper]
- Multi-source Domain Generalization [Paper]
- Low-Shot Robustness [Preprint]

Research Intern, PRIOR, Allen Institute for AI   Summer 2022
Mentored by Ani Kembhavi, Roozbeh Mottaghi and Judy Hoffman   Seattle, WA
Learning representations of environments from house tours to improve sample efficiency
and generalization for embodied agents across tasks and simulators

Research Intern, PRIOR, Allen Institute for AI   Summer 2020
Mentored by Ani Kembhavi, Roozbeh Mottaghi and Judy Hoffman   Atlanta, GA
Benchmark to assess robustness of embodied navigation agents
[Project Page][Paper]

Research Intern, Deep Learning Group, Microsoft Research AI   Summer 2018
Mentored by Hamid Palangi   Redmond, WA
Improving goal-driven visually grounded dialog under the presence
of an adversarial utterance evaluator

Research Assistant, Visual Intelligence Lab, Georgia Tech   2017-2019
Mentored by Prof. Devi Parikh and Prof. Dhruv Batra   Atlanta, GA
Worked on problems at the intersection of computer vision and natural language processing
- Zero-shot Learning [Paper]
- Cooperative Human-AI Games [Paper]
- (Diverse) Generative Visual Dialog [Paper]
- Sub-goals in RL [Paper]
- Evaluating Explanations via Human-AI Teams [Paper]
- AI Challenge Evaluation Framework [Preprint]

Research Assistant, CVMLP Lab, Virginia Tech   2016-2017
Mentored by Prof. Devi Parikh and Prof. Dhruv Batra   Blacksburg, VA
Worked on problems at the intersection of computer vision and natural language processing
- Counting Objects in Everyday Scenes [Paper]
- Human-AI Teams [Preprint]

AWARDS AND RECOGNITION

2023   **Awarded ICCV Doctoral Consortium**
2023   **Outstanding Reviewer** for CVPR
2022   **Outstanding Reviewer** for CVPR
2022   **Highlighted Reviewer** for ICLR
2021   **Outstanding Reviewer** for CVPR
2021   **Outstanding Reviewer** for MLRC
2020   **Among Top 33% Reviewers** for ICML
2020   **NVIDIA Best Runner Up Paper Award** at AROW, ECCV
2020   **Rising Star Doctoral Student Award**, School of Interactive Computing, Georgia Tech
2019   **One of the best reviewers** for NeurIPS
2019   **Outstanding Reviewer** for ICLR
2018   **IC Student Travel Grant** to attend NeurIPS
2018   **Among Top 30% Reviewers** for NeurIPS
2018   **MS Research Award**, College of Computing, Georgia Tech
2017   **Subfinalist**, LDV Enterpreneurial Computer Vision Challenge
2017   **Winner**, VTHacks (MLH event at Virginia Tech)
2013   **Semi-Finalists** out of 30 participating teams at ROBOSUB-AUVSI
2013   **Finalists** out of 27 participating teams at NIOT-SAVe
2014   **Merit Scholarships** for Academic Performance 2012-2014
2013   **National Top 1%:** Indian National Physics Olympiad (InPhO)
2012   **KVPY and INSPIRE Fellowships**

PREPRINTS

1. V. Prabhu, S. Yenanmandra, **P. Chattopadhyay**, J. Hoffman. "LANCE: Stress-testing Visual Models by Generating Language-guided Counterfactual Images" *ArXiv 2023*

2. A. Chandrasekaran*, D.Yadav*, **P. Chattopadhyay***, V. Prabhu*, D. Parikh. "It Takes Two to Tango: Towards Theory of AI's Mind." *ArXiv 2017*

PEER-REVIEWED CONFERENCE PRESENTATIONS

1. **P. Chattopadhyay***, K. Sarangmath*, V. Vijaykumar, J. Hoffman. "PASTA: Proportional Amplitude Training Spectrum Augmentation for Syn-to-Real Domain Generalization." *International Conference on Computer Vision (ICCV) 2023*

2. A. Singh, K. Sarangmath, **P. Chattopadhyay**, J. Hoffman. "Benchmarking Low-Shot Robustness to Natural Distribution Shifts." *International Conference on Computer Vision (ICCV) 2023*

3. **P. Chattopadhyay**, J. Hoffman, R. Mottaghi, A. Kembhavi. "RobustNav: Towards Benchmarking Robustness in Embodied Navigation." *International Conference on Computer Vision (ICCV) 2021* **[Oral]**
   (Also presented at Embodied AI Workshop, CVPR 2021)

4. **P. Chattopadhyay**, Y. Balaji, J. Hoffman. "Learning to Balance Specificity and Invariance for In and Out of Domain Generalization." *European Conference on Computer Vision (ECCV) 2020*
   (Also presented at Visual Learning with Limited Labels (LwLL), CVPR 2020)

5. N. Modhe, **P. Chattopadhyay**, M. Sharma, A. Das, D. Parikh, D. Batra, R. Vedantam. "IR-VIC: Unsupervised Discovery of Sub-goals for Transfer in RL." *European Conference on Computer Vision (ECCV) 2020*

6. V. Murahari, **P. Chattopadhyay**, D. Batra, D. Parikh, A. Das. "Improving Generative Visual Dialog by Answering Diverse Questions." *Empirical Methods in Natural Language Processing (EMNLP) 2019* *(Also presented at Visual Question Answering and Dialog Workshop, CVPR 2019)*

7. R. Selvaraju*, **P. Chattopadhyay***, M. Elhoseiny, T. Sharma, D. Batra, D. Parikh, S. Lee. "Choose Your Neuron: Incorporating Domain Knowledge Through Neuron-Importance." *European Conference on Computer Vision (ECCV) 2018* *(Also presented at Continual Learning Workshop, NeurIPS 2018)* *(Also presented at Visually Grounded Interaction and Language (ViGIL) Workshop, NeurIPS 2018)*

8. A. Chandrasekaran*, V. Prabhu*, D.Yadav*, **P. Chattopadhyay***, D. Parikh. "Do Explanations make VQA models more predictable to a human?" *Empirical Methods in Natural Language Processing (EMNLP) 2018*

9. **P. Chattopadhyay***, D.Yadav*, V. Prabhu, A. Chandrasekaran, A. Das, S. Lee, D. Batra, D. Parikh. "Evaluating Visual Conversational Agents via Cooperative Human-AI Games." *AAAI Conference on Human Computation and Crowdsourcing (HCOMP) 2017* [**Oral**]

10. **P.Chattopadhyay***, R.Vedantam*, R. Selvaraju, D. Batra, D. Parikh. "Counting Everyday Objects in Everyday Scenes." *IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2017* [**Spotlight**]

WORKSHOP PAPERS

1. F. Lin, R. Mittapali, **P. Chattopadhyay**, D. Bolya, J. Hoffman. "Likelihood Landscapes: A Unifying Principle Behind Many Adversarial Defenses." *Adversarial Robustness in the Real World (AROW), ECCV 2020* [**Talk**] **NVIDIA Best Paper Runner Up** 🏆

2. N. Modhe, **P. Chattopadhyay**, M. Sharma, A. Das, D. Parikh, D. Batra, R. Vedantam. "DS-VIC: Unsupervised Discovery of Decision States for Transfer in RL." *Task-Agnostic Reinforcement Learning (TARL) Workshop, ICLR 2019* [**Talk**]

3. D. Yadav, R. Jain, H. Agrawal, **P. Chattopadhyay**, T. Singh, A. Jain, S. Singh, S. Lee, D. Batra. "EvalAI: Towards Better Evaluation Systems for AI Agents." *Workshop on AI Systems, SOSP 2019*

4. A. Chandrasekaran*, D.Yadav*, **P. Chattopadhyay***, V. Prabhu*, D. Parikh. "It Takes Two to Tango: Towards Theory of AI's Mind." *Chalearn Looking at People Workshop, CVPR 2017* [**Talk**]

TALKS

- **"Reliable Vision for a Changing World"** at Google   Jan 2023
  (with Viraj Prabhu and Judy Hoffman)

PROJECTS

Exploring Weak-Supervision and Generative Models for Semantic Segmentation [PDF]
As a project for CS 8803: Probabilistic Graphical Models, Spring 2018

DTU AUV: Autonomous Underwater Vehicle [PDF]
As a part of DTU-AUV (undergraduate research) team

MENTORING

Sahil Khose, Master's, Georgia Tech	2023-Present
Aaditya Singh, Master's, Georgia Tech	2022-2023
Aayushi Agarwal, Master's, Georgia Tech	2021-2023
Deepanshi Deepanshi, Master's, Georgia Tech	2021-2023
Kartik Sarangmath, Master's, Georgia Tech	2021-2022
Vivek Vijaykumar, Bachelor's, Georgia Tech	2022
Rohit Mittapalli, Bachelor's, Georgia Tech	2020-2021
Fu Lin, Master's, Georgia Tech	2020-2021

OTHER RESEARCH EXPERIENCE

Research Intern, Robotics Research Lab, IIIT Hyderabad — Winter 2014
Mentored by Prof. K Madhava Krishna — Hyderabad, India
Robotics: Implemented an efficient strategy for a robot to discover, recognize and navigate to a selected few objects among some scattered in an environment

Research Intern, IACS, Kolkata — Summer 2014
Mentored by Prof. Soumitra Sengupta — Kolkata, India
Theoretical Physics: Worked on finding Charged Rotating Black Hole solutions in Einstein-Gauss-Bonnet dilaton coupled gravity

Undergraduate Researcher, Autonomous Underwater Vehicle Team, DTU — 2012-2016
Mentored by Prof. R K Sinha — Delhi, India
Underwater Acoustics: Developed and implemented range estimation algorithms for Passive Source Localization from Time Difference of Arrival (TDOA) values

TEACHING EXPERIENCE

CS 8803: Machine Learning with Limited Supervision — Atlanta, GA
Graduate Teaching Assistant — Fall 2022

CS 4476: Introduction to Computer Vision — Atlanta, GA
Graduate Teaching Assistant — Spring 2021

PROFESSIONAL SERVICES

Manuscript Reviewer (🏆 indicates reviewer awards)

IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 🏆x3	2018-2023
Neural Information Processing Systems (NeurIPS) 🏆x2	2018-2023
Association for Computational Linguistics (ACL)	2019
International Conference on Learning Representations (ICLR) 🏆x2	2019-2022
IEEE International Conference on Robotics and Automation (ICRA)	2021-2022
International Conference on Machine Learning (ICML) 🏆	2019-2020
International Conference on Computer Vision (ICCV)	2023
European Conference on Computer Vision (ECCV)	2018
Machine Learning Reproducibility Challenge (MLRC) 🏆	2021-2022
IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)	2021-2022

Challenge Organization

Visual Dialog Challenge	CVPR 2020
(co-organized with Vishvak Murahari)	