PRITHVIJIT CHATTOPADHYAY

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RESEARCH INTERESTS

Reducing Distribution Sensitivity in Vision by Improving Benchmarking, Generalization and Reliability
Specific: Robust & Reliable Machine Learning, Sim2Real Transfer, Embodied AI, Generative Models

EDUCATION

Ph.D. in Computer Science, School of Interactive Computing, Georgia Tech — 2019-2024 (expected)
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

- Model Resilience to Distribution Shifts (Ongoing)
- Synthetic Aerial Imagery Benchmark [Preprint]
- Calibration in Sim2Real Adaptation [Preprint]
- Sim2Real Generalization [Paper]
- Embodied Robustness Benchmark [Paper]
- Interpreting Adversarial Robustness [Paper]
- Multi-source Domain Generalization [Paper]
- Low-Shot Robustness [Paper]

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. **P. Chattopadhyay**, B. Goyal, B. Ecsedi, V. Prabhu, J. Hoffman. "AugCal: Improving Sim2Real Adaptation by Uncertainty Calibration on Augmented Synthetic Images." *ArXiv 2023*
2. S. Khose*, A. Pal*, A. Agarwal*, D. Deepanshi*, J. Hoffman, **P. Chattopadhyay**. "SkyScenes: A Synthetic Dataset for Aerial Scene Understanding." *ArXiv 2023*
3. 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. M. Goldblum, H. Souri, R. Ni, M. Shu, V. Prabhu, G. Somepalli, **P. Chattopadhyay**, A. Bardes, M. Ibrahim, J. Hoffman, R. Chellappa, A. Wilson, T. Goldstein. "Battle of the Backbones: A Large-Scale Comparison of Pretrained Models across Computer Vision Tasks" *Neural Information Processing Systems (NeurIPS) Datasets and Benchmarks 2023*
2. V. Prabhu, S. Yenanmandra, **P. Chattopadhyay**, J. Hoffman. "LANCE: Stress-testing Visual Models by Generating Language-guided Counterfactual Images" *Neural Information Processing Systems (NeurIPS) 2023*

3. **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*
4. A. Singh, K. Sarangmath, **P. Chattopadhyay**, J. Hoffman. "Benchmarking Low-Shot Robustness to Natural Distribution Shifts." *International Conference on Computer Vision (ICCV) 2023*
5. **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)
6. **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)
7. 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*
8. 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)
9. 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)
10. 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*
11. **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]**
12. **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. **P. Chattopadhyay**, B. Goyal, B. Ecsedi, V. Prabhu, J. Hoffman. "AugCal: Improving Sim2Real Adaptation by Uncertainty Calibration on Augmented Synthetic Images." *Workshop on Uncertainty Quantification for Computer Vision (UNCV), ICCV 2023*
2. 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 🏆
3. 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]**
4. 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*
5. 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 Machine Perception, Google — Jan 2023
  (with Viraj Prabhu and Judy Hoffman)

PROFESSIONAL SERVICES

Manuscript Reviewer (🏆indicates reviewer awards)

IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 🏆x3	2018-2024
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)

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

MENTORING

Sahil Khose, Master's, Georgia Tech	2023-Present
Anisha Pal, 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

PROJECTS

Investigating Visual Dialog Models for Goal-Driven Self-Talk [PDF]
As a project for CS 7001: Grad. Studies Computing, Fall 2019

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

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