Prithvijit Chattopadhyay

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RESEARCH AREAS

Out-of-Distribution Generalization, Embodied RL, Interpretability
Robust Machine Learning, Reinforcement Learning

EDUCATION

School of Interactive Computing, Georgia Tech 2019-Present
Ph.D. in Computer Science
Advised by Prof. Judy Hoffman

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

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

AWARDS & RECOGNITION

Among top 33% reviewers for ICML 2020
NVIDIA Best Runner Up Paper Award at AROW, ECCV 2020
Recipient: CS-7001 Research Award (2020) - Interactive Computing, Georgia Tech
Invited to mentor students at the "New in ML" workshop at NeurIPS 2019
Recognized as one of the highest-scoring reviewers for NeurIPS 2019
Outstanding Reviewer for ICLR 2019
Recipient: IC Student Travel Grant to attend NeurIPS 2018
Among top 30% reviewers for NeurIPS 2018
Recipient: MS Research Award (2018) - College of Computing, Georgia Tech
Winner: VT-Hacks, 2017, a Major League Hacking event.
Semi-Finalists: ROBOSUB - AUVSI, 2013 out of 30 participating teams
Finalists: NIOT SAVe, 2013 out of 27 participating teams
Recipient: Merit Scholarships for Undergraduate Academic Performance (2012-2014)
Recipient: KVPY and INSPIRE Fellowships, 2012
National Top 1%: Indian National Physics Olympiad (InPhO), 2013

PUBLICATIONS & PRE-PRINTS (*denotes equal contribution)

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

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

IR-VIC: Unsupervised Discovery of Sub-goals for Transfer in RL
IJCAI 2020
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 **(Poster)**
N. Modhe, **P. Chattopadhyay**, M. Sharma, A. Das, D. Parikh, D. Batra, R. Vedantam

Improving Generative Visual Dialog by Answering Diverse Questions
Conference on Empirical Methods in Natural Language Processing (EMNLP) 2019 **(Poster)**
V. Murahari, **P. Chattopadhyay**, D. Batra, D. Parikh, A. Das

EvalAI: Towards Better Evaluation Systems for AI Agents
arXiv 2019 **(Technical Report)**
Workshop on AI Systems, SOSP 2019 **(Poster)**
D. Yadav, R. Jain, H. Agrawal, **P. Chattopadhyay**, T. Singh, A. Jain, S. Singh, S. Lee, D. Batra

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

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

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

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

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

Delhi Technological University: Design and Development of the Littoral AUV Zyra 2.0
AUVSI RoboSub Journal 2014 (**Technical Report**)

EXPERIENCE

PRIOR, Allen Institute of AI May 2020 - Aug 2020
Research Intern, mentored by Ani Kembhavi, Roozbeh Mottaghi and Judy Hoffman
Assessing the robustness of embodied navigation agents to visual and dynamics corruptions

Deep Learning Group, Microsoft Research AI May 2018 - Aug 2018
Research Intern, mentored by Hamid Palangi
Improving goal-driven visually grounded dialog under the presence of an adversarial utterance evaluator

Visual Intelligence Lab, Georgia Tech Aug 2017 - Aug 2019
Research Assistant, mentored by Prof. Devi Parikh and Prof. Dhruv Batra
Worked on problems at the intersection of computer vision and natural language processing with a focus towards building intelligent and interpretable systems.

CVMLP Lab, Virginia Tech Jun 2015 - May 2017
Research Assistant, mentored by Prof. Devi Parikh and Prof. Dhruv Batra
Worked on scene-understanding problems such as object detection and counting in everyday scenes with a downstream focus towards visual question answering

Robotics Research Lab, IIIT Hyderabad Dec 2014 - Jan 2015
Research Intern, mentored by Prof. K Madhava Krishna
Implemented an efficient strategy for a robot to discover, recognize and navigate to a selected few objects among some scattered in an environment, based on a "guess from far and recognize from near" strategy.

IACS, Kolkata Jun 2014 - Aug 2014
Research Intern, mentored by Prof. Soumitra Sengupta
Worked on finding Charged Rotating Black Hole solutions in Einstein-Gauss-Bonnet dilaton coupled gravity and simulated the conditions for the existence of multiple horizons in constant scalar curvature f(R) gravity.

Autonomous Underwater Vehicle Team, DTU Aug 2012 - Aug 2016
Undergraduate Researcher, mentored by Prof. R K Sinha
Underwater Acoustics: Developed and implemented range estimation algorithms for Passive Source Localization from Time Difference of Arrival (TDOA) values in conjunction with machine vision techniques.

PROFESSIONAL SERVICES

Reviewing

IEEE Conference on Computer Vision and Pattern Recognition (CVPR)	2018, 2021
Neural Information Processing Systems (NeurIPS)	2018, 2019, 2020
Association for Computational Linguistics (ACL)	2019
International Conference on Learning Representations (ICLR)	2019, 2020, 2021
International Conference on Machine Learning (ICML)	2019, 2020
European Conference on Computer Vision (ECCV)	2018

Challenge Organization

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

TEACHING EXPERIENCE

Teaching Assistant
CS 4476: Introduction to Computer Vision Spring 2021
Instructor: Prof. Judy Hoffman

OTHER PROJECTS

Exploring Weak Supervision and Generative Models for Semantic Segmentation
Course Project, Probabilistic Graphical Models
We explored weakly supervised semantic segmentation using localization cues obtained from GradCAM – a post-hoc saliency map generation approach for deep networks. We further studied semantic segmentation via deep probabilistic generative models. Specifically, we used joint VAE models with retrofitted unimodal inference networks to model the joint distribution of image, attributes and segmentation maps.

RELEVANT COURSEWORK

Graduate Coursework
• Deep Learning • Machine Learning • Machine Learning Theory
• Probabilistic Graphical Models in Machine Learning
• Computability and Algorithms • Information Visualization
• Adaptive Control and Reinforcement Learning
• High-Dimensional Data Analysis

Selected Undergraduate Coursework
• Control Systems • Pattern Recognition • Advanced Analog Circuit Design
• Network Analysis and Circuit Theory • Microprocessors • Digital Electronics
• Electromagnetic Field Theory

REFERENCES

• Prof. Judy Hoffman, Georgia Tech (email: judy@gatech.edu)
• Prof. Devi Parikh, Georgia Tech (email: parikh@gatech.edu)
• Prof. Dhruv Batra, Georgia Tech (email: dbatra@gatech.edu)
• Dr. Ani Kembhavi, PRIOR AllenAI (email: anik@allenai.org
• Dr. Roozbeh Mottaghi, PRIOR AllenAI (email: roozbehm@allenai.org)
• Prof. Stefan Lee, Oregon State University (email: steflee@gatech.edu)
• Prof. Mohamed H. Elhoseiny, KAUST (email: mohamed.elhoseiny@kaust.edu.sa)
• Dr. Hamid Palangi, MSR AI (email: hpalangi@microsoft.com)