Siddhant Agarwal

Google Scholar | siddhant@cs.utexas.edu | LinkedIn | agarwalsiddhant10.github.io

Education

The University of Austin at Texas — Austin, USA
Ph.D. in Computer Science — *August 2022 - Now*
Advisors: Professor Amy Zhang and Professor Peter Stone

Indian Institute of Technology Kharagpur — Kharagpur, India
B.Tech. + M.Tech. (Dual Degree) in Computer Science and Engineering — *July 2017 - June 2022*
Department Rank 1 (GPA 9.90/10.00)

Fields of Interest

Reinforcement Learning, Goal Conditioned RL, Representation Learning, Robotics, Optimization

Publications

f-Policy Gradients: A General Framework for Goal Conditioned RL using f-Divergences
Siddhant Agarwal, Ishan Durugkar, Peter Stone, Amy Zhang
37th International Conference on Neural Information Processing Systems(NeurIPS), 2023

Behavior Predictive Representations for Generalization in Reinforcement Learning
Siddhant Agarwal, Aaron Courville, Rishabh Agarwal
The Multi-Disciplinary Conference on Reinforcement Learning and Decision Making (RLDM), 2022, NeurIPS 2021 EcoRL and DeepRL workshops

Reinforcement Explanation Learning
Siddhant Agarwal, Owais Iqbal, Sree Aditya Buridi, Madda Manjusha, Abir Das
NeurIPS 2021 workshop on eXplainable AI approaches for debugging and diagnosis [Oral]

Poisoned Classifiers are not only backdoored, they are fundamentally broken
Mingie Sun, **Siddhant Agarwal**, Zico Kolter
ICLR 2021 workshop on Security and Safety in Machine Learning Systems

Learning to Deceive Knowledge Graph Augmented Models via Targeted Perturbations
Mrigank Raman, Aaron Chan*, **Siddhant Agarwal***, Peifeng Wang, Hansen Wang, Sungchul Kim, Ryan Rossi, Handong Zhao, Nedim Lipka, Xiang Ren (* denotes equal contribution)
International Conference on Learning Representations (ICLR), 2021

Traffic Sign Classification using Hybrid HOG-SURF Features using Convolutional Neural Networks
Rishabh Madan*, Deepank Agrawal*, Shreyas Kowshik*, Harsh Maheshwari*, **Siddhant Agarwal***, Debashish Chakraborty (* denotes equal contribution, order decided on dice roll)
International Conference on Pattern Recognition Applications and Methods, Prague 2019

Experience

Data Engineering Intern — June 2021 - July 2021
Goldman Sachs — *India*

Developed a python client to use the services of an ETL platform to quickly transfer data from pandas dataframe to a MemSQL store. Created RESTful server endpoints for the ETL platform and accessed them from the client.

Research Intern — May 2020 - October 2020
LocusLab, Carnegie Mellon University, ***Advisor: Zico Kolter*** — *Pittsburg, USA*

- Showed that *backdoored classifiers* are fundamentally broken and can be attacked by anyone rather than only the adversary.
- Used the perceptual property of robust classifiers and smoothing techniques to construct alternate triggers.

Research Intern — March 2020 - May 2020
INKLab, University of Southern California, ***Advisor: Xiang Ren*** — *Los Angeles, USA*

- Incorporated common sense knowledge from KGs (ConceptNet) into visual linguistic models like VL-BERT using MHGRN and RN to deduce common sense inferences from images and answer questions from the VCR dataset.
- Trained DQN policies to heavily perturb KGs without changing the downstream performance of the different KG models. Was able to deceive MHGRN, GRN and RN (on CSQA and OBQA) and KGCN and RippleNet (on MovieLens and Music).

Autonomous Ground Vehicles Research Group March 2018 - March 2022
Indian Institute of Technology Kharagpur *Kharagpur, India*

Worked to develop a category 3 autonomous ground vehicle. Developed traffic sign classification system for Indian traffic signs, lane segmentation systems, planning using Frenet Serret Local Planner and Time Elastic Bands and Localization systems using Extended Kalman Filters.

Competitions

RoboCup Standard Platform League, Bordeaux 2023

Prepared a team of 5 Nao robots to compete in a soccer tournament which involved developing the basic motion system like walking and kicking along with localization to estimate the agent's position in the field.

Bosch Traffic Sign Detection, Inter IIT Tech Meet *Bronze* 2021

Developed a web-based tool to add real-life data augmentations on a traffic sign dataset, train classifiers, and debug them. The tool helps the users to visualize the mistakes of the model and debug the model.

Intelligent Ground Vehicles Competition, Oakland University, Michigan, *Runners Up* 2018 & 2019

Developed an autonomous ground vehicle for a constraint environment using simple Computer Vision and Image Processing techniques for Lane navigation and Obstacle avoidance, TEB local planner for planning. First team to qualify.

Teaching Experiences and Services

Graduate Teaching Assistant

- CS343 Artificial Intelligence, The University of Texas at Austin 2022
- CS60010 Deep Learning, IIT Kharagpur 2022
- CS60077 Reinforcement Learning, IIT Kharagpur 2021

The International Summer School on Situational Awareness in Cognitive Technologies, *Speaker* 2021

Conducted a hands-on session with on the contemporary techniques in explainable AI like CAM, GradCAM, and RISE.

Dynamic Neural Networks meet Computer Vision Workshop at CVPR, *Volunteer & Reviewer* 2021

Volunteered to help the organizers with the logistics of the workshop, and created the workshop posters.

Reviewer

ICLR 2024, NeurIPS 2023 Goal Conditioned Reinforcement Learning workshop, NeurIPS 2023, CVPR 2021 workshop on Dynamic Neural Networks meet Computer Vision

Achievements

Most Creative Poster at the Texas Robotics Symposium 2023

Graduate Scholarship from ECE Dept, UT Austin 2023

Institute Silver Medal for securing Rank 1 in the Department of Computer Science and Engineering 2022

GATE Scholarship for Teaching Assistantship 2021

IUSSTF - Viterbi Scholarship - *Only around ten students selected from India* 2020

Class of 1970 Alumni (US) Association Prize for *best student in order of merit* among third year B.Tech.(Hons.)/B.Arch.(Hons.) courses securing highest CGPA 2019

IIT Kharagpur Alumni (California Chapter) Award for being the *best student in order of merit* among third year B.Tech.(Hons.)/B.Arch.(Hons.) courses securing highest CGPA 2019

Student Par Excellence Award by Computer Science & Engineering Dept 2018

KVPY Fellowship Award - *Among the top 0.6% of the applicants* 2017

OutReach

Texas Robot Parade 2023

Demonstrated the Naos from our RoboCup Standard Platform League Team that plays soccer in a competitive tournament.

Directed Reading Program, *Mentor* 2023

Organize a reading group on reinforcement learning for undergraduate students to get them involved in RL research

Relevant Courses and Skills

Courses: Linear Algebra, Calculus, Probability and Statistics, Convex Optimization, Online Learning, Deep Learning, Reinforcement Learning, Robot Learning, Operating Systems, CUDA Programming, Distributed Systems

Relevant libraries and Frameworks: pytorch, Tensorflow, ROS, OpenAI-gym, Mujoco, gazebo, git, UI/UX, POSIX