

Education

PhD Student, *Computer Science*, Harvard University, CGPA - 4.0/4.0

B.Tech (Honors) + M.S. by Research, *Computer Science*, IIIT Hyderabad, CGPA - 9.29/10

Experience

Jan 2021 - **Graduate Research Assistant**, *SEAS*, Harvard University

Present Worked on restless multi-arm bandits for medical adherence domains with Prof. Milind Tambe

Sep 2019 - **Research Engineer**, *School of Information Systems*, Singapore Management University

Dec 2020 Worked with Dr. Pradeep Varakantham to develop defenses for adversarial attacks on machine learning models.

Aug 2018 - **Graduate Research Assistant**, *Machine Learning Lab*, IIIT Hyderabad

May 2019 Advisors: Dr. Praveen Paruchuri and Dr. Sujit Gujar. Developed algorithms for an autonomous trading agent for energy markets. Placed 2nd in annual PowerTAC 2018 competition.

Aug 2016 - **Teaching Assistant**, *IIIT Hyderabad*

May 2019 (i) Principles of Information Security (Spring 2019, Spring 2018), (ii) Introduction to Game Theory (Monsoon 2017), (iii) Computer Networks (Spring 2017), and (iv) SSAD & Project (Monsoon 2016)

May–July **Research Intern**, *Innovation Labs*, Tata Consultancy Services - Hyderabad

2018 Advisors: Dr. Easwar Subramanian and Dr. Sanjay Bhat. Improved, and developed new trading algorithms for a trading agent in the energy market. *Java, Python*

May–July **Research Intern**, *Innovation Labs*, Tata Consultancy Services - Hyderabad

2017 Advisors: Dr. Easwar Subramanian and Dr. Sanjay Bhat. Developed a power trading agent & benchmarked against past agents using PowerTAC testbed. *Java*

May – Sep **Google Summer of Code**, LibreOffice, [🔗](#)

2016 Developed 7 panels and 3 decks in the sidebar for the LibreOffice suite (released in v5.3). Panels offered quick settings for page formatting, background, fonts, media playback, headers & footers etc. *C++, Glade*

June 2015 **Teaching Assistant**, *IIT Kharagpur*, Network Management Workshop

Instructor - Dr. Swapan Purkait. *Bash, Networking, Linux, Cisco Packet Tracer*

July 2014 **Teaching Assistant**, *Nettech Private Limited*, Network Management Workshop - Kolkata

Instructor - Dr. Swapan Purkait. *Bash, Networking, Linux, Cisco Packet Tracer*

Publications

IAAI-22 **Facilitating human-wildlife cohabitation through conflict prediction**, *Susobhan Ghosh, Pradeep Varakantham, Aniket Bhatkhande, Tamanna Ahmad, Anish Andheria, Wenjun Li, Aparna Taneja, Divy Thakkar, Milind Tambe*, In proceedings of the 34th Annual Conference on Innovative Applications of Artificial Intelligence (IAAI), 2022, [🔗](#)

AAMAS-22 **Efficient Algorithms for Finite Horizon and Streaming Restless Multi-Armed Bandit Problems**, *Aditya Mate, Arpita Biswas, Christoph Siebenbrunner, Susobhan Ghosh, Milind Tambe*, International Conference on Autonomous Agents and Multi-agent Systems (AAMAS), 2022, [🔗](#)

IAAI-22 **Using Public Data to Predict Demand for Mobile Health Clinics**, *Haipeng Chen, Susobhan Ghosh, Gregory Fan, Nikhil Behari, Arpita Biswas, Mollie Williams, Nancy E. Oriol, Milind Tambe*, In proceedings of the 34th Annual Conference on Innovative Applications of Artificial Intelligence (IAAI), 2022, [🔗](#)

AAAI-20 **Bidding in Smart Grid PDAs: Theory, Analysis and Strategy**, *Susobhan Ghosh, Sujit Gujar, Praveen Paruchuri, Easwar Subramanian, Sanjay P. Bhat*, In proceedings of Thirty-Fourth AAAI Conference on Artificial Intelligence, [🔗](#)

- AAAI-19 **VidyutVanika: A Reinforcement Learning Based Broker Agent for a Power Trading Competition**, *Susobhan Ghosh, Easwar Subramanian, Sanjay P. Bhat, Sujit Gujar, Praveen Paruchuri*, In proceedings of Thirty-Third AAAI Conference on Artificial Intelligence, [↗](#)
- MS Thesis **Learning Strategies for Power Trading in Smart Grids**, *Susobhan Ghosh*, International Institute of Information Technology, Hyderabad, [↗](#)
- PASS-19 **VidyutVanika: An Autonomous Broker Agent for Smart Grid Environment**, *Susobhan Ghosh, Kritika Prakash, Sanjay Chandekar, Easwar Subramanian, Sanjay P. Bhat, Sujit Gujar, Praveen Paruchuri*, Accepted for Policy, Awareness, Sustainability and Systems (PASS) Workshop

Highlighted Projects

- Nov 2021 – Present **Restless Multi-armed Bandits (RMABs) for shorter time horizons**, *Reinforcement Learning*
Motivated by the medical adherence domain, working on developing online RL algorithms to quickly learn optimal actions in an RMAB setting, given a very short time horizon.
- Apr 2020 – Aug 2021 **Predicting and mitigating human-wildlife conflicts**, *Deep Learning, Mechanism Design*
Developed a system to predict human-wildlife conflict intensity using remote sensing data and imagery. Worked on compensation schemes for losses associated to crop damage due to human-wildlife conflicts.
- Sep 2019 – Dec 2020 **Developing defenses against Adversarial Attacks**, *Game Theory, Supervised Learning*
Modeling the adversarial attacks on machine learning models as a game, and trying to develop defenses by solving the game while simultaneously increasing robustness of the model. More specifically, modeling PDF based attacks as a Bayesian Stackelberg game, and exploring defenses by solving such games.
- Jan 2017 – Jul 2019 **Power Trading Agent Competition**, *Reinforcement Learning, Auctions, Smart Grids*, [↗](#)
Developed a trading agent on PowerTAC simulator which operates across retail, wholesale and balancing markets. Stood 2nd in PowerTAC 2018 Finals.
- Aug–Nov 2017 **Negotiation Agent**, *Multi-Agent Systems, Game Theory, Java*, [↗](#)
Developed a Multi-Party Negotiation Agent for the GENIUS platform using Opponent Modelling, which came 1st in a 10-agent tournament
- Aug–Nov 2016 **Online News Popularity**, *Machine Learning, Scikit-Learn, Python*, [↗](#)
Determined popularity of Mashable posts: Feature extraction - PCA & Fischer Score; Classification and prediction - bagging on Random Forest, KNN, Naive Bayes, SVM, and NN (all implemented from scratch).
- Feb 2016 **AI For Modified Ultimate Tic Tac Toe**, *Artificial Intelligence, Search Algorithms, Python*, [↗](#)
Developed an AI bot for playing a modified version of Ultimate Tic-Tac-Toe which moves in 12 seconds using min-max and alpha-beta pruning, and heuristics.

Achievements & Honors

Gold Medalist: Awarded for having highest CGPA in class of 2015.

Dean's Merit List: Award for Academic Excellence for years 2015-16, 2016-17 & 2017-18

AAAI Student Scholarship and Volunteer: Awarded to students publishing in AAAI conference.

Microsoft Research Travel Grant: To attend AAAI-19

Central Sector Scheme of Scholarship (CSSS) 2013

Prime Minister Scholarship Scheme (PMSS) 2013

ACM ICPC 2014: Qualified for the Onsite Kharagpur Regionals

Skills

- Languages C, C++, Python, Java, Erlang, SQL, HTML5, CSS3, JS, PHP, UML
- Frameworks Weka, Three.js, AngularJS, Ruby on Rails, OpenGL 3.0, WebGL, Scikit-Learn, Bootstrap, PyGame
- Others Git, GNU/Linux, LibreOffice Development, Moodle Extension Development, Autodesk Maya, Glade, Network Management, Tox, Matlab, \LaTeX , Cisco Packet Tracer