

## 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

- Aug 2020 - Present **Graduate Research Assistant**, *SEAS*, Harvard University  
Advised by Prof. Milind Tambe
- Sep 2019 - Dec 2020 **Research Engineer**, *School of Information Systems*, Singapore Management University  
Worked with Dr. Pradeep Varakantham to develop defenses for adversarial attacks on machine learning models.
- Aug 2018 - May 2019 **Graduate Research Assistant**, *Machine Learning Lab*, IIIT Hyderabad  
Advisors: Dr. Praveen Paruchuri and Dr. Sujit Gujar. Developed algorithms for an autonomous trading agent for energy markets. Placed 2<sup>nd</sup> in annual PowerTAC 2018 competition.
- Aug 2016 - May 2019 **Teaching Assistant**, *IIIT Hyderabad*  
(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 2018 **Research Intern**, *Innovation Labs*, Tata Consultancy Services - Hyderabad  
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 2017 **Research Intern**, *Innovation Labs*, Tata Consultancy Services - Hyderabad  
Advisors: Dr. Easwar Subramanian and Dr. Sanjay Bhat. Developed a power trading agent & benchmarked against past agents using PowerTAC testbed. *Java*
- May – Sep 2016 **Google Summer of Code**, LibreOffice, [🔗](#)  
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
- 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 Chandlekar, Easwar Subramanian, Sanjay P. Bhat, Sujit Gujar, Praveen Paruchuri*, Accepted for Policy, Awareness, Sustainability and Systems (PASS) Workshop

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## Highlighted Projects

- Apr 2020 – Present **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 2<sup>nd</sup> 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.

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## 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

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## 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

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## References

**Dr. Milind Tambe:** Gordon McKay Professor of Computer Science, Harvard University

**Dr. Pradeep Varakantham:** Associate Professor at SIS, Singapore Management University

**Dr. Praveen Paruchuri:** Associate Professor at Machine Learning Lab, IIIT Hyderabad

**Dr. Sujit Gujar:** Assistant Professor at Machine Learning Lab, IIIT Hyderabad

**Dr. Sanjay P. Bhat:** Principal Scientist at Innovation Labs, TCS Hyderabad

**Dr. Easwar Subramanian:** Scientist at Innovation Labs, TCS Hyderabad