(+1) 857-316-7162
susobhan_ghosh@g.harvard.edu
https://susobhan.me

# Susobhan Ghosh

## Education

**Ph.D. in Computer Science** | Harvard University 08/2020 - 05/2026 *(expected)*
- Advisor: Prof. Susan A. Murphy
- Research area: Bayesian Reinforcement Learning (RL) in Healthcare

**M.S. and B.Tech (Hons.) in Computer Science** | IIIT Hyderabad 2015 - 2019
- GPA: 9.29/10.00, Rank: 1 (Gold Medalist).

## Experience

**Applied Scientist II Intern** | Amazon 06/2025 - Present
- Designing RL algorithms for Amazon's Supply Chain Optimization.

**Doctoral Researcher** | Harvard University 09/2019 - Present
- In collaboration with University of Michigan, served as the RL-tech lead and a core member in a multi-year research project called MiWaves. MiWaves is a digital intervention to help reduce cannabis use among emerging adults (age 18-25).
- Designed an RL algorithm called reBandit which utilizes mobile sensor and observational data to help deliver digital interventions in any healthcare study. reBandit was utilized in the clinical trial for MiWaves, which resulted in a 77% participant engagement rate.
- Published peer-reviewed scientific articles at AAAI, IJCAI, IAAI, AAMAS, ISCA, and Machine Learning Journal.
- Highly sought-after guest speaker at venues like SAA, SCT, INFORMS and ENAR, and courses at Harvard like Statistical RL.
- Served as a peer-concentration advisor for 2 undergraduate students, and teaching assistant for a course on Classical Readings in CS.

**Research Engineer** | Singapore Management University 09/2019 - 12/2020
- In collaboration with Google and Wildlife Conservation Trust India, led the design of a multi-year multidisciplinary research project to help reduce human-wildlife conflicts.
- Developed an AI-based prediction tool to determine areas with high risk of human-wildlife conflicts (published at AAAI). As of 2024, tool currently used by WCT India at Bramhapuri Forest Division in Chandrapur, Maharashtra, India.

**Graduate Research Assistant** | IIIT Hyderabad 09/2018 - 07/2019
- Developed an autonomous broker named VidyutVanika V2 for trading electricity in power grid markets, which placed 2nd in 2018 Power Trading Agent Competition (PowerTAC).
- Published the tariff, wholesale and balancing electricity market autonomous algorithms of VidyutVanika V2 at AAAI.

**Research Intern** | TCS Innovation Labs, Hyderbad, India 05/2018 - 07/2018
- Designed trading algorithms for real-time load balancing in power markets.

**Research Intern** | TCS Innovation Labs, Hyderbad, India 05/2017 - 07/2017
- Led the development of VidyutVanika V1, an autonomous broker – which finished 4th in 2017 PowerTAC competition.

**Google Summer of Code** | LibreOffice 05/2016 - 09/2016
- Designed and developed 7 panels and 3 decks for sidebars for the LibreOffice suite (available in LibreOffice v5.3+).
- LibreOffice releases with my sidebars are being used by over 200 million users (as of 2024).

## PUBLICATIONS

1. **Susobhan Ghosh***, Bhanu T. Gulapalli*, Daiqi Gao, Asim Gazi, Anna Trella, Ziping Xu, Kelly Zhang, Susan A. Murphy. "Reproducible workflow for online AI in digital health" *Philosophical Transactions of The Royal Society A*, 2025.

2. **Susobhan Ghosh**, Pei-Yao Hung, Lara N. Coughlin, Erin E. Bonar, Yongyi Guo, Inbal Nahum-Shani, Maureen Walton, Mark W. Newman, and Susan A. Murphy. "It felt more real: Investigating the User Experience of the MiWaves Personalizing JITAI Pilot Study." *EAI International Conference on Pervasive Computing Technologies for Healthcare*, 2025.

3. Asim H. Gazi, Daiqi Gao, **Susobhan Ghosh**, Ziping Xu, Anna Trella, Predrag Klasnja, Susan A. Murphy. "Digital Twins for Just-in-Time Adaptive Interventions (JITAI-Twins): A Framework for Optimizing and Continually Improving JITAIs". *Under Review*, 2025.

4. **Susobhan Ghosh***, Anna Trella*, Erin Bonar, Lara Coughlin, Finale Doshi-Velez, Yongyi Guo, Pei-Yao Hung, Inbal Nahum-Shani, Vivek Shetty, Maureen Walton, Iris Yan, Kelly Zhang, Susan Murphy. Effective Monitoring of Online Decision-Making Algorithms in Digital Intervention Implementation. *Under Review*, 2024.

5. **Susobhan Ghosh**, Yongyi Guo, Pei-Yao Hung, Lara Coughlin, Erin Bonar, Inbal Nahum-Shani, Maureen Walton, Susan Murphy. reBandit: Random Effects based Online RL algorithm for Reducing Cannabis Use. *International Joint Conference on Artificial Intelligence (IJCAI)*, 2024.

6. **Susobhan Ghosh***, Raphael Kim*, Prasidh Chhabria, Raaz Dwivedi, Predrag Klasnja, Peng Liao, Kelly Zhang, Susan Murphy. Did we personalize? Assessing personalization by an online reinforcement learning algorithm using resampling. *Machine Learning Journal*, 2024.

7. Lara Coughlin, Maya Campbell, Tiffany Wheeler, Chavez Rodriguez, Autumn Rae Florimbio, **Susobhan Ghosh**, Yongyi Guo, Pei-Yao Hung, Mark Newman, Huijie Pan, Kelly Zhang, Lauren Zimmermann, Erin Bonar, Maureen Walton, Susan Murphy, Inbal Nahum-Shani. A mobile health intervention for emerging adults with regular cannabis use: A micro-randomized pilot trial design protocol. *Contemporary Clinical Trials*, 2024.

8. **Susobhan Ghosh**, Yongyi Guo, Pei-Yao Hung, Lara Coughlin, Erin Bonar, Inbal Nahum-Shani, Maureen Walton, and Susan Murphy. "MiWaves Reinforcement Learning Algorithm" *arXiv preprint arXiv:2408.15076 (2024)*.

9. Sanjay Chandlekar, Bala Suraj Pedasingu, **Susobhan Ghosh**, Easwar Subramanian, Sanjay Bhat, Praveen Paruchuri, Sujit Gujar. VidyutVanika: AI-Based Autonomous Broker for Smart Grids: From Theory to Practice. *Energy Sustainability through Retail Electricity Markets, Applied Innovation and Technology Management Book Series*, 2023.

10. Arpita Biswas, Jackson Killian, Paula Diaz, **Susobhan Ghosh**, Milind Tambe. Fairness for Workers Who Pull the Arms: An Index Based Policy for Allocation of Restless Bandit Tasks. *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, 2023.

11. Aditya Mate, Arpita Biswas, Christoph Siebenbrunner, **Susobhan Ghosh**, Milind Tambe. Efficient Algorithms for Finite Horizon and Streaming Restless Multi-Armed Bandit Problems. *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, 2022.

12. **Susobhan Ghosh**, Pradeep Varakantham, Aniket Bhatkhande, Tamanna Ahmad, Anish Andheria, Wenjun Li, Aparna Taneja, Divy Thakkar, Milind Tambe. Facilitating human-wildlife cohabitation through conflict prediction. *AAAI Conference on Artificial Intelligence (AAAI)*, 2022.

13. Haipeng Chen, **Susobhan Ghosh**, Gregory Fan, Nikhil Behari, Arpita Biswas, Mollie Williams, Nancy E. Oriol, Milind Tambe. Using Public Data to Predict Demand for Mobile Health Clinics. *AAAI Conference on Artificial Intelligence (AAAI)*, 2022.

14. **Susobhan Ghosh**, Sujit Gujar, Praveen Paruchuri, Easwar Subramanian, Sanjay P. Bhat. Bidding in Smart Grid PDAs: Theory, Analysis and Strategy. *AAAI Conference on Artificial Intelligence (AAAI)*, 2020.

15. **Susobhan Ghosh**, Easwar Subramanian, Sanjay P. Bhat, Sujit Gujar, Praveen Paruchuri. VidyutVanika: A Reinforcement Learning Based Broker Agent for a Power Trading Competition. *AAAI Conference on Artificial Intelligence (AAAI)*, 2019.
16. **Susobhan Ghosh**. Learning Strategies for Power Trading in Smart Grids. *MS Thesis, IIIT Hyderabad*, 2019.
17. **Susobhan Ghosh**, Kritika Prakash, Sanjay Chandlekar, Easwar Subramanian, Sanjay P. Bhat, Sujit Gujar, Praveen Paruchuri. VidyutVanika: An Autonomous Broker Agent for Smart Grid Environment. *Policy, Awareness, Sustainability and Systems (PASS) Workshop*, 2019.

## TALKS & LECTURES

- **JITAI-Twins: A Digital Twin Framework for Reinforcement Learning Algorithms and Just-in-Time Adaptive Interventions**, INFORMS 2025 (Invited Talk)
- **Deploying RL algorithms for digital interventions**, ENAR 2025 (Invited Talk)
- **reBandit: Personalizing Treatment Delivery for Reducing Cannabis use**, INFORMS 2024 (Invited Talk)
- **reBandit: Random Effects based Online RL algorithm for Reducing Cannabis Use**, IJCAI 2024
- **MiWaves: AI-driven Digital Health Interventions to help reduce cannabis use**, SAA 2024
- **RL in real life: mixed effects models and reBandit**, STAT234 (Spring 2024, 2025): Statistical Reinforcement Learning at Harvard University (Guest Invited Lecture)
- **MiWaves: Using AI to help reduce cannabis use among emerging adults**, d3C Think Tank Jan 2024 (Invited)
- **MiWaves: Developing a 2nd Generation JITAI to reduce cannabis use among emerging adults**, d3C Think Tank May 2023 (Invited)
- **MiWaves**, d3C Think Tank Oct 2022 (Invited)
- **VidyutVanika: A Reinforcement Learning Based Broker Agent for a Power Trading Competition**, AAAI 2019
- **Review of Sidebar and its functionality**, LibreOffice Conference 2016 (Invited Talk)

## TEACHING

- **Teaching Assistant**, Classics in Computer Science, Harvard University 2022
- **Teaching Assistant**, Information Security, IIIT Hyderabad 2019, 2018
- **Teaching Assistant**, Introduction to Game Theory, IIIT Hyderabad 2017
- **Teaching Assistant**, Computer Networks, IIIT Hyderabad 2017
- **Teaching Assistant**, Introduction to Software Engineering, IIIT Hyderabad 2016
- **Teaching Assistant**, Network Management Workshop, IIT Kharagpur 2015
- **Teaching Assistant**, Network Management Workshop, Nettech Pvt. Ltd. 2014

## AWARDS AND HONORS

- **Siebel Scholarship Award**, Siebel Foundation 2025
- **Best Reviewer Award**, AISTATS 2025 2025
- **Gold Medalist**, IIIT Hyderabad 2019
- **AAAI Student Scholarship**, AAAI 2019
- **Microsoft Research Travel Grant** 2019
- **Dean's Merit List**, IIIT Hyderabad 2016, 2017, 2018
- **Central Sector Scheme of Scholarship (CSSS)**, India 2013
- **Prime Minister Scholarship Scheme (PMSS)**, India 2013

## SKILLS

**Languages**: English, Hindi, Bengali.

**Programming Languages**: `Python`, `C++`, `C`, `Java`.

## Community Services

**Reviewer for**: *AISTATS-26, NYRL 2025, NeurIPS-25, AISTATS-25, NeurIPS-24, RLC-24*
**Open Source Contributor**: *LibreOffice*