Sanket Shah

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Education

Harvard University 2019 – Current
Ph.D., Computer Science, Advisor: Milind Tambe Cambridge, MA

Birla Institute of Technology and Science, Pilani 2013 – 2017
BE (Hons.), Computer Science Rajasthan, India

- GPA: 9.02/10, Merit Scholarship, Graduated with Distinction

Experience

Harvard University 2020 – Current
Graduate Research Assistant, Advisor: Prof. Milind Tambe Cambridge, MA

- Conducting research in machine learning and sequential decision-making, especially as it applies to challenges in public health.

Singapore Management University 2018 – 2020
Research Engineer, Advisor: Prof. Pradeep Varakantham Singapore

- Authored two first-author research papers that use Reinforcement Learning (RL) to address Sequential Decision Making problems that underlie societal challenges in Transportation and Security.

Microsoft Research India Spring 2017
Research Intern, Advisor: Dr. Colin Scott and Dr. Bill Thies Bangalore, India

- Helped build an Android app that aimed to augment local peer-to-peer file transfer like Bluetooth (a substitute to the internet for media acquisition in low resource communities) by creating a barter economy. Helped pilot the application in a village in Bihar, India along with my advisor and local partners from the region.

Microsoft Research India Fall 2016
Research Intern, Advisor: Dr. Sundararajan Sellamanickam Bangalore, India

- Investigated the 'explainability' of Recurrent Neural Networks in terms of compositional linguistic structures like 'and' and 'but' for the task of Sentiment Analysis in English.

Philips India Ltd. Summer 2016
Research Intern, Internal Technology Accelerator Bangalore, India

- Prototyped the conversation engine for a wearable device to assist the elderly. Helped design an annotation scheme for patient medical records.

National Centre for Polar and Ocean Research Summer 2015
Independent Undergraduate Researcher, Advisors: Dr. Dr. Sridhar Jawak Goa, India

- Performed pixel-based supervised and unsupervised learning on hyper-spectral satellite imagery to study the spectral characteristics of supraglacial lakes in the Antarctic.

Publications

* indicates equal contribution

Work in Progress

[1] **S. Shah**, B. Wilder, A. Perrault, and M. Tambe, "Decision-focused learning without decision-making: Learning locally optimized decision losses", *arXiv preprint arXiv:2203.16067*, 2022.

[2] K. Wang, S. Verma, A. Mate, **S. Shah**, A. Taneja, N. Madhiwalla, A. Hegde, and M. Tambe, "Decision-focused learning in restless multi-armed bandits with application to maternal and child care domain", *arXiv preprint arXiv:2202.00916*, 2022.

Rigorously Reviewed Conference Publications

[3] **S. Shah**, M. Lowalekar, and P. Varakantham, "Joint Pricing and Matching for City-Scale Ride-Pooling", in *International Conference on Automated Planning and Scheduling (ICAPS)*, 2022.

[4] K. Wang, **S. Shah**, H. Chen, A. Perrault, F. Doshi-Velez, and M. Tambe, "Learning MDPs from Features: Predict-Then-Optimize for Sequential Decision Problems by Reinforcement Learning", *Advances in Neural Information Processing Systems*, Dec. 2021.

[5] J. A. Killian, A. Biswas, **S. Shah**, and M. Tambe, "Q-Learning Lagrange Policies for Multi-Action Restless Bandits", in *Proceedings of the 27th ACM SIGKDD Conference on Knowledge Discovery & Data Mining*, 2021, pp. 871–881.

[6] N. Raman, **S. Shah**, and J. Dickerson, "Data-Driven Methods for Balancing Fairness and Efficiency in Ride-Pooling", in *Proceedings of the Thirtieth International Joint Conference on Artificial Intelligence, IJCAI-21*, International Joint Conferences on Artificial Intelligence Organization, Aug. 2021, pp. 363–369.

[7] **S. Shah**, M. Lowalekar, and P. Varakantham, "Neural Approximate Dynamic Programming for On-Demand Ride-Pooling", in *Proceedings of 34rd AAAI Conference on Artificial Intelligence (AAAI), New York*, 2020, pp. 507–515.

[8] **S. Shah**, A. Sinha, P. Varakantham, A. Perrault, and M. Tambe, "Solving Online Threat Screening Games using Constrained Action Space Reinforcement Learning", in *Proceedings of 34rd AAAI Conference on Artificial Intelligence (AAAI), New York*, 2020.

Demonstrations

[9] A. Kumar, **S. Shah**, M. Lowalekar, P. Varakantham, A. Ottley, and W. Yeoh, "FairVizARD: A Visualization System for Assessing Fairness of Ride-Sharing Matching Algorithms", in *International Conference on Automated Planning and Scheduling (ICAPS)*, 2021.

Teaching

- **Teaching Fellow**, Harvard University — Fall 2021
  CS 120: Algorithms and their Limitations
  –This was the first offering of the course. Helped design the course, managed undergraduate course assistants and course logistics, lead section, held office hours, designed and graded problem sets.