Jayesh K. Gupta

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Interests

Sequential decision making, multi-agent systems, continual learning, deep learning.

Education

2015-2020 **Doctor of Philosophy in Computer Science**, *Stanford University*, Stanford.
GPA - 3.9/4.0

2011–2015 **B. Tech. in Electrical Engineering**, *Indian Institute of Technology*, Kanpur.
Minor in Computer Science, GPA - 8.9/10.0

Research Experience

2015-2020 Ph.D. candidate at Stanford University. Advisor: Mykel Kochenderfer

Summer 2019 Research Intern at Microsoft Research, Cambridge, UK. Collaborators: Sam Devlin, Katja Hofmann

Summer 2014 Undergraduate researcher at Cornell University. Mentor: Ashutosh Saxena

2014 Undergraduate researcher at IIT Kanpur. Mentor: A. K. Chaturvedi

2012-2013 Undergraduate researcher at IIT Kanpur. Mentor: Nishchal Verma

Publications

Kunal Menda*, Jean de Becdelievre*, **Jayesh K. Gupta***, Ilaan Kroo, Mykel J. Kochenderfer and Zachary Manchester, **Scalable Identification of Partially Observed Systems with Certainty-Equivalent EM**, *International Conference on Machine Learning (ICML)* , 2020.

Shushman Choudhary, **Jayesh K. Gupta**, Mykel J. Kochenderfer, Dorsa Sadigh and Jeannette Bohg, **"Dynamic Multi-Robot Task Allocation under Uncertainty and Temporal Constraints"**, *Robotics: Science and Systems (RSS)*, 2020. [pdf].

Jayesh K. Gupta*, Kunal Menda*, Zachary Manchester and Mykel J. Kochenderfer, **"Structured Mechanical Models for Robot Learning and Control"**, *Conference on Learning for Dynamics and Control (L4DC)*, 2020. [pdf|website].

Xiaobai Ma, **Jayesh K. Gupta** and Mykel Kochenderfer, **"Normalizing Flow Model for Policy Representation in Continuous Action Multi-agent Systems"**, *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, 2020. [pdf]

Bohan Wu, **Jayesh K. Gupta** and Mykel J. Kochenderfer, **"Model Primitives for Hierarchical Lifelong Reinforcement Learning"**, *Journal of Autonomous Agents and Multiagent Systems (JAAMAS)*, 2020. [pdf].

Raunak P. Bhattacharyya, Derek J. Phillips, Changliu Liu, **Jayesh K. Gupta**, Katherine Driggs-Campbell and Mykel J. Kochenderfer **"Simulating Emergent Properties of Human Driving Behavior Using Multi-Agent Reward Augmented Imitation Learning"** *International Conference on Robotics and Automation (ICRA)*, 2019. [pdf].

Bohan Wu, **Jayesh K. Gupta** and Mykel J. Kochenderfer, **"Model Primitive Hierarchical Lifelong Reinforcement Learning"**, *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, 2019. **Long oral presentation**. [pdf].

Aditya Grover, Maruan Al-Shedivat, **Jayesh K. Gupta**, Yuri Burda and Harrison Edwards, **"Learning Policy Representations in Multiagent Systems"**, *International Conference on Machine Learning (ICML)*, 2018. **Long oral presentation**. [pdf]

Aditya Grover, Maruan Al-Shedivat, **Jayesh K. Gupta**, Yuri Burda and Harrison Edwards, **"Evaluating Generalization in Multiagent Systems using Agent-Interaction Graphs"**, *Autonomous Agents and Multiagent Systems (AAMAS)*, 2018. [pdf]

John Mern, **Jayesh K. Gupta** and Mykel Kochenderfer **"Layer-wise Synapse Optimization for Implementing Neural Networks on General Neuromorphic Architectures"**, *IEEE Symposium Series on Computational Intelligence (SSCI)*, 2017. [pdf]

Jayesh K. Gupta, Maxim Egorov and Mykel Kochenderfer, **"Cooperative Multi-agent Control using Deep Reinforcement Learning"**, *Autonomous Agents and Multiagent Systems (AAMAS)*, 2017. **Best Paper** at ALA Worskshop. [pdf]

Maxim Egorov, Zachary N. Sunberg, Edward Balaban, Tim A Wheeler, **Jayesh K. Gupta**, Mykel J. Kochenderfer **"POMDPs.jl: A Framework for Sequential Decision Making under Uncertainty"**, *Journal of Machine Learning Research (JMLR)*, 2017. [website]

Jonathan Ho, **Jayesh K. Gupta** and Stefano Ermon, **"Model-Free Imitation Learning with Policy Optimization"**, *International Conference on Machine Learning (ICML)*, 2016. [pdf]

Ashesh Jain, Debarghya Das, **Jayesh K. Gupta** and Ashutosh Saxena, **"PlanIt: A Crowdsourcing Approach for Learning to Plan Paths from Large Scale Preference Feedback"**, *International Conference on Robotics and Automation (ICRA)*, 2015. [website]

Nishchal Verma, **Jayesh K. Gupta**, Sumanik Singh, Rahul Sevakula, Sonal Dixit, **"Feature Level Analysis"**, *IEEE Workshop On Computational Intelligence: Theories, Applications and Future Directions, IIT Kanpur*, pp. 148-152, July 2013. [poster|pdf]

Jayesh K. Gupta, Sumanik Singh, Nishchal K. Verma, **"MTBA: Matlab Toolbox for Biclustering Analysis"**, *IEEE Workshop On Computational Intelligence: Theories, Applications and Future Directions, IIT Kanpur*, pp. 94-97, July 2013. [poster|pdf|website]

Nishchal Verma, Sumanik Singh, **Jayesh K. Gupta**, Rahul K. Sevakula, Sonal Dixit, Al Salour, **"Smart Phone Application for Fault Recognition"**, *2012 Sixth International Conference on Sensing Technology (ICST2012)*, 18-21 Dec. 2012. [pdf]

Other Work (Workshop/Under Review)

Jayesh K. Gupta[*], Shushman Choudhary[*], Peter Morales and Mykel J. Kochenderfer, **"Scalable Anytime Planning for Multi-Agent MDPs"**. Under submission.

Sheng Li, **Jayesh K. Gupta**, Ross Allen, Peter Morales and Mykel J. Kochenderfer, **"Deep Implicit Coordination Graphs for Multi-Agent Reinforcement Learning"**. Under submission.

Ross E. Allen, Javona White Bear, **Jayesh K. Gupta** and Mykel J. Kochenderfer, **"Health-Informed Policy Gradients for Multi-Agent Reinforcement Learning"**. `Under submission`.

Kunal Menda*, **Jayesh K. Gupta***, Zachary Manchester and Mykel J. Kochenderfer, **"Structured Mechanical Models for Efficient Reinforcement Learning"**, *Workshop on "Structure & Priors in Reinforcement Learning" (SPiRL)*, 2019. [pdf].

Jayesh K. Gupta*, Kunal Menda*, Zachary Manchester and Mykel J. Kochenderfer, **"A General Framework for Structured Learning of Mechanical Systems"**. `Under submission`.

Kunal Menda*, **Jayesh K. Gupta*** and Mykel J. Kochenderfer, **"Efficiently Grounding Symbolic Operators for Lifelong Learning"**. `Under submission`.

Awards and Achievements

- Best paper award, ALA Workshop, AAMAS 2017
- Received **Academic Excellence Award** for distinctive performance in the terms 2011-12 and 2012-13.
- **All India Rank 477** in **IIT Joint Entrance Examination 2011**, out of around 500,000.
- Selected for **KVPY** (Kishore Vaigyanik Protsahan Yojana) Scholarship in 2011.

Teaching

Winter 2019	AA222/CS361: Engineering Design Optimization. TA
Fall 2018	AA228/CS238: Decision Making under Uncertainty. TA
Spring 2017	CS234: Reinforcement Learning. Guest Lecture
Winter 2017	AA222/CS361: Engineering Design Optimization. TA
Fall 2017	AA228/CS238: Decision Making under Uncertainty. TA

Service

Reviewer

- **Journals**: JMLR (2018), AURO (2020)
- **Conferences**: NIPS (2017, 2018, 2019), ICML (2018, 2019), ICLR (2019, 2020), AAAI (2019), IROS (2019, 2020)

Technical Skills

Languages	Python, Julia, C, C++, Ruby, JavaScript
OS	Unix, Windows

Open Source Contributions

JuliaPOMDP: Contributor and co-maintainer of the POMDPs.jl suite of packages.