

Prateek Jaiswal

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EDUCATION

Purdue University, West Lafayette, IN
Ph.D., School of Industrial Engineering

August 2021

Dissertation: Variational Inference for Data-driven Stochastic Programming

Committee: Dr. Harsha Honnappa, Dr. Vinayak A. Rao,

Dr. Raghu Pasupathy, Dr. Gesualdo Scutari, and Dr. J. George Shanthikumar

Indian Institute of Technology, Patna, India
B. Tech., Mechanical Engineering

May 2012

RESEARCH INTERESTS

- Bandits & Reinforcement learning • Stochastic programming • Stochastic optimization • Bayesian Statistics
- Machine learning • Large deviations analysis

PUBLICATIONS

1. **Jaiswal, P.**, Pati, D.; Bhattacharya, A.; and Mallick, B.K. “Generalized Regret Analysis of Thompson Sampling using Fractional Posteriors”, *Submitted*.
Finalist (top 4) at INFORMS 2022 Data Mining Best Paper Competition (General Track)
2022 Joe Newton Best Poster Award at Conference on Advances in Data Science: Theory, Methods and Computation
2. **Jaiswal, P.**, Honnappa, H., and Rao, V.A. “Bayesian Joint Chance Constrained Optimization: Approximations and Statistical Consistency”, *SIAM Journal of Optimization*, Vol. 33, No. 3, pp. 1968–1995, 2023
Proceedings of The 2nd Symposium on Advances in Approximate Bayesian Inference, PMLR 118:1-12, 2020. (Shorter version)
3. **Jaiswal, P.**, Rao, V.A.; and Honnappa, H. “Asymptotic Consistency of α -Rényi-Approximate Posteriors”, *Journal of Machine Learning Research*, (156):1- 42, 2020.
4. **Jaiswal, P.**, Honnappa, H., and Rao, V.A. “Asymptotic Consistency of Loss-calibrated Variational Bayes”, *Stat 9*, no. 1 (2020): e258.
5. **Jaiswal, P.**, and Honnappa, H. ‘Statistical Inference for Approximate Bayesian Optimal Design’. In *Proceedings of the 2020 Winter Simulation Conference, Piscataway, NJ, 2020. Institute of Electrical and Electronics Engineers, Inc.*
6. Wang R., **Jaiswal, P.**, and Honnappa, H. ‘Estimating Stochastic Poisson Intensities Using Deep Latent Models’. In *Proceedings of the 2020 Winter Simulation Conference, Piscataway, NJ, 2020. Institute of Electrical and Electronics Engineers, Inc.*
7. **Jaiswal, P.**, Honnappa, H., and Rao, V.A. “Risk-sensitive Variational Bayes: Formulation and Bounds”, *Under submission*.
Shorter version accepted at *NeurIPS 2019 workshop on Safety and Robustness in Decision Making*.
8. **Jaiswal, P.**, Honnappa, H., and Pasupathy, R. ‘Optimal Allocations for Sample Average Approximation’. In *Proceedings of the 2018 Winter Simulation Conference, Piscataway, NJ, 2018. Institute of Electrical and Electronics Engineers, Inc.*
9. **Jaiswal, P.** and Larson, J. “Multistart Algorithm for Identifying All Optima of a Nonconvex Stochastic Oracle”. *Under review at Optimization Letters*.

INVITED TALKS, CONFERENCES & WORKSHOPS

1. **Jaiswal, P.**, Pati, D.; Bhattacharya, A.; and Mallick, B.K. “Generalized Regret Analysis of Thompson Sampling using Fractional Posteriors” - *Conference on Advances in Data Science: Theory, Methods and Computation* - Oct 2022.
2. **Jaiswal, P.**, Pati, D.; Bhattacharya, A.; and Mallick, B.K. “Generalized Regret Analysis of Thompson Sampling using Fractional Posteriors” - *INFORMS Annual Meeting* - Oct 2022.
3. **Jaiswal, P.**, Pati, D.; Bhattacharya, A.; and Mallick, B.K. “Generalized Regret Analysis of Thompson Sampling using Fractional Posteriors” - *TTIC Summer Workshop: New Models in Online Decision Making for Real-World Applications* - July 2022.
4. **Jaiswal, P.**, Honnappa, H. “Statistical Inference for Approximate Bayesian Optimal Design”, *Winter Simulation Conference (Virtual)*- Dec 2020.
5. **Jaiswal, P.**, Honnappa, H. “Variational Inference for Bayes Optimal Design”, *INFORMS Annual Meeting (Virtual)* - Nov 2020.
6. **Jaiswal, P.**, Honnappa, H., and Rao, V.A. “Variational Inference for Risk-Sensitive Decision-Making”, *NeurIPS Workshop on Safety and Robustness in Decision Making* - Dec 2019.
7. **Jaiswal, P.**, Honnappa, H., and Rao, V.A. “Variational Bayesian method for Stochastically Constrained System Design Problem”, *INFORMS Annual Meeting* - Oct 2019.
8. **Jaiswal, P.**, Honnappa, H., and Rao, V.A. “Variational Bayesian method for Stochastically Constrained System Design Problem”, *The 13th Young European Queueing Theorists (YEQT) workshops, EURANDOM, TU Eindhoven, The Netherlands* - Oct 2019.
9. **Jaiswal, P.**, Honnappa, H., and Rao, V.A. “Variational Bayes for Data-Driven Newsvendor Problem”, *Conference on Data Science for Business and Economics, Purdue University, West Lafayette, IN, USA* - May 2018.

EXPERIENCE

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- **Postdoctoral Research Associate** Sep 2021 - present
TAMU-FIDS & Department of Statistics, Texas A&M University, College Station, TX
Advisors: Dr. Bani K. Mallick, Dr. Anirban Bhattacharya, Dr. Debdeep Pati
Topic: Developing and analyzing Bayesian sequential decision-making algorithms.
 - **Graduate Research Assistant** May 2017 - May 2020
Stochastic Systems Lab, Purdue University, West Lafayette, IN
Advisors: Dr. Harsha Honnappa and Dr. Vinayak A. Rao
Topics: Variational inference for stochastic programming, Large deviation analysis of Sample average approximation
 - **Givens Associate** May 2020 - Aug 2020
Argonne National Laboratory, Lemont, IL
Advisor: Dr. Mohan Krishnamoorthy
Topic: Multistart stochastic optimization method to tune the parameters of a high-energy physics event generator.
 - **Givens Associate** May 2019 - Aug 2019
Argonne National Laboratory, Lemont, IL
Advisor: Dr. Jeffrey M. Larson
Topic: Multistart algorithm for non-convex stochastic optimization.
 - **Assistant Manager** Jul 2012 - Jul 2016
Bharat Petroleum Corp. Ltd. (BPCL), India

- **Research Assistant** May 2011 - Jul 2011
Centre for Advanced Composites Manufacturing, University of Auckland, New Zealand
Advisor: Prof. Debes Bhattacharyya
Topic: Manufacturing and analysis of Graphene-based nano-composites.

ACADEMIC SERVICE

Journals *(manuscripts reviewed)*
Journal of Machine Learning Research (JMLR) (1)
Journal of American Statistical Association (JASA) (1)
IIE Transactions (1)

Conferences
International Conference on Machine Learning (ICML) (4)
Neural Information Processing Systems (NeurIPS) (5)
International Conference on Artificial Intelligence and Statistics (AISTATS) (4)
Uncertainty in Artificial Intelligence (UAI) (1)

AWARDS

- Finalist (top 4) at INFORMS 2022 Data Mining Best Paper Competition (General Track)
- Joe Newton Best Poster Award at 2022 Conference on Advances in Data Science: Theory, Methods and Computation
- Awarded Sustainable Horizons Institute grant to attend the SIAM CSE21 conference and Broader Engagement (BE) program.
- Awarded PGSG Travel grant to attend INFORMS 2020 and NeurIPS 2020.

SKILLS

Python (Pacakges: PyTorch, SciPy, NumPy, scikit-learn) • Matlab (Toolboxes: Deep Learning, Optimization, SIMOPT, Statistical and Machine Learning) • R (Statistical and optimization packages) • L^AT_EX/MS-Office • C/C++ • Version Control (Git, Bitbucket) • High Performance Computing (Clusters: Purdue RCAC- Brown and Argonne National Lab- Powell)