

Publications

2021

- Malani, A., Shah, D., Kang, G., Lobo, G.N., Shastri, J., Mohanan, M., Jain, R., Agrawal, S., Juneja, S., Imad, S. and Kolthur-Seetharam, U., 2021. Seroprevalence of SARS-CoV-2 in slums versus non-slums in Mumbai, India. *The Lancet Global Health*, 9(2), pp.e110-e111. ([link](#)) Medrxiv version <https://www.medrxiv.org/content/10.1101/2020.08.27.20182741v1>
- Agrawal, S., Juneja, S. and Koolen, W.M., 2021. Regret Minimization in Heavy-Tailed Bandits. To appear in Conference on Learning Theory (COLT) 2021. <https://arxiv.org/pdf/2102.03734.pdf>.
- Deo, Anand and Juneja, Sandeep, Credit Risk: Simple Closed Form Approximate Maximum Likelihood Estimator. *Operations Research* 69 (2), 361-379 <https://pubsonline.informs.org/doi/pdf/10.1287/opre.2020.2029>
- Moka, S. B., S. Juneja and M. R. H. Mandjes. 2021. Rejection and Importance Sampling based Perfect Simulation for Gibbs Hard Sphere Models. [arXiv:1705.00142](https://arxiv.org/abs/1705.00142) To appear in *Advances in Applied Probability*

Covid related reports

- Juneja, S., Mittal, D. 2021. Potential 3rd COVID Wave in Mumbai: Scenario Analysis ([Draft Report](#)).
- Juneja, S., Mittal, D. 2021. Modelling the Second Covid-19 Wave in Mumbai <https://arxiv.org/pdf/2105.02144.pdf>
- Harsha, P., Juneja, S., Mittal, D. and Saptharishi, R. 2020. COVID-19 Epidemic in Mumbai: Long term projections, full economic opening, and containment zones versus contact tracing and testing. Preprint. ([updated October pdf](#)) <https://arxiv.org/abs/2011.02032> ([Early September pdf](#))
- [Mumbai-Serosurvey Technical report-NITI BMC-Round-2](#)
- [Mumbai-Serosurvey Technical report-NITI](#)
- P Harsha, S Juneja, P Patil, N Rathod, R Saptharishi, A. Y. Sarath, S Sriram, P Srivastava, R Sundaresan, N K. Vaidhiyan. 2020. COVID-19 Epidemic Study II:

Phased Emergence From the Lockdown in Mumbai.
<http://arxiv.org/abs/2006.03375>

2020

- S Agrawal, S Juneja and P Glynn. 2020. Optimal δ -correct best arm selection for heavy-tailed distributions. Algorithmic Learning Theory (ALT 2020). Pp 61-110. <https://arxiv.org/abs/1908.09094> [Erratum](#).
- S. Agrawal, S. Bhandari, A. Bhattacharjee, A. Deo, N. Dixit, P. Harsha, S. Juneja, P. Kesarwani, A. Swamy, P. Patil, N. Rathod, R. Saptharishi, S. Shriram, P. Srivastava, R. Sundaresan, N. K. Vaidhiyan, and S. Yasodharan (2020). City-Scale Agent-Based Simulators for the Study of Non-Pharmaceutical Interventions in the Context of the COVID-19 Epidemic. *Journal of the Indian Institute of Science*, 1-39. ([link](#))
- Bassamboo, A., Deep, V., Juneja, S., and Zeevi, A. 2020. Discriminative Learning via Adaptive Questioning. <https://arxiv.org/pdf/2004.05442.pdf>
- Agrawal, S., Koolen, W.M. and Juneja, S., 2020. Optimal Best-Arm Identification Methods for Tail-Risk Measures. *arXiv preprint arXiv:2008.07606*.

2019

- S Juneja and S Krishnasamy. 2019. Sample complexity of partition identification using multi-armed bandits. Conference on Learning Theory [COLT 2019](#): 1824-1852 ([pdf](#))
- A Deo and S Juneja. 2019. Limiting distributional fixed points in systemic risk graph models. Proceedings of Winter Simulation Conference 2019. IEEE Press. 878-889. ([pdf](#))
- S Moka, D Kroese and S Juneja. Unbiased estimation of the reciprocal mean for non-negative random variables. Proceedings of Winter Simulation Conference 2019. IEEE Press. 404-415 ([pdf](#))

2018

- D. Reijbergen, P. de Boer, W. Scheinhardt and S. Juneja. 2018. Path-ZVA: general, efficient and automated importance sampling for highly reliable

Markovian systems. *ACM Transactions on Modeling and Computer Simulation (TOMACS)*, 28(3), p.22.

- P. Glynn and S. Juneja. 2018. Selecting the best system and multi-armed bandits. <http://arxiv.org/abs/1507.04564>
- V. Kavitha, I. Saha and S Juneja. 2018. Random Fixed Points, Limits and Systemic Risk. In *2018 IEEE Conference on Decision and Control (CDC)* (pp. 5813-5819). IEEE

2017

- Hong, L. J., S. Juneja, and G. Liu. 2017. Kernel smoothing for nested estimation with application to portfolio risk measurement. *Operations Research*. 65 (3), 657-673.
- Juneja, S. and N. Shimkin. 2017. On the Computation of Dynamic User Equilibrium in the Multiclass Transient Fluid Queue. *ACM SIGMETRICS Performance Evaluation Review*. 45 (2), 137-142. doi: [10.1145/3199524.3199547](https://doi.org/10.1145/3199524.3199547)
- Moka, S. B., S. Juneja, and M. R. H. 2017. Analysis of Perfect Sampling Methods for Hard-sphere Models. *ACM SIGMETRICS Performance Evaluation Review*. 45 (2), 69-75 doi: [10.1145/3199524.3199536](https://doi.org/10.1145/3199524.3199536)
- Juneja, S. 2017. Dynamic Portfolio Credit Risk and Large Deviations. In *Econophysics and Sociophysics: Recent Progress and Future Directions*, pp. 41-58. Springer, Cham. ([pdf](#))

2016

- A. Agarwal, S. Juneja and R. Sircar. 2016. American Options under Stochastic Volatility: Control Variates, Maturity Randomization & Multiscale Asymptotics. *Quantitative Finance* 16 (1), 17-30.
- S. Juneja and D. Manjunath. 2016. To Lounge or to Queue Up. *MAMA'16, ACM SIGMETRICS 2016* ([pdf](#))
- H Hult, S Juneja, K Murthy. 2016. [Exact and efficient simulation of tail probabilities of heavy-tailed infinite series](#). arXiv:1609.01807, 2016

2015

- S. Foss, S. Juneja, M. Mandjes and S. B. Moka. 2015. Spatial Loss Systems: Exact Simulation and Rare Event Behavior. *ACM SIGMETRICS Performance Evaluation Review* 43 (2), 3-6 ([pdf](#))
- S. Dey, S. Juneja, K. R. A. Murthy. 2015. Incorporating Views on Marginal Distributions in the Calibration of Risk Models. *Operations Research Letters*, Volume 43, Issue 1, January 2015, Pages 46–51
- P. Glynn and S. Juneja. 2015. Ordinal optimization - empirical large deviations rate estimators, and stochastic multi-armed bandits <https://arxiv.org/abs/1507.04564v2>
- S. B. Moka and S. Juneja 2015. Regenerative Simulation for Queueing Networks with Exponential or Heavier Tail Arrival Distributions. *ACM Transactions on Modeling and Computer Simulation (TOMACS)* 25 (4), 1-22 [arXiv:1307.5424v2](#)
- Agarwal and S. Juneja. 2015. Nearest neighbor based estimation technique for pricing Bermudan options. *International Game Theory Review* Vol. 17, No. 1, 1540002 (31 pages) ([pdf](#))
- S. Juneja and T. Raheja. 2015. The Concert Queueing Game: Fluid Regime with Random Order Service. *International Game Theory Review*, Vol. 17, No. 2, 1540012 (15 pages) ([pdf](#))

2014

- K. R. A. Murthy, S. Juneja and J. Blanchet. 2014. State-independent Importance Sampling for Random Walks with Regularly Varying Increments. [arXiv:1206.3390v3](#). *Stochastic Systems*, Issue 2, Volume 4, 321-374.
- J. Hong, S. Juneja and J. Luo. 2014. Estimating Sensitivities of Portfolio Credit Risk using Monte Carlo. *INFORMS Journal of Computing*. <http://dx.doi.org/10.1287/ijoc.2014.0602>; 26, 4, 848 – 865.

2013

- A. Agarwal, S. Dey and S. Juneja. Efficient Simulation of Large Deviation Events for Sums of Random Vectors using Saddle Point Representations. [I. Appl. Probab.](#) Volume 50, Number 3 (2013), 703-720. [\(pdf\)](#)
- S. Juneja and M. Mandjes. Overlap Problems on the Circle. [Adv. in Appl. Probab.](#) Volume 45, Number 3 (2013), 773-790. [\(pdf\)](#)
- P. Glynn and S. Juneja, Asymptotic Simulation Efficiency based on Large Deviations. *ACM TOMACS* **23**, 3, Article No. 20 [\(pdf\)](#)
- S. Juneja and N. Shimkin. 2013. The Concert Queueing Game: Strategic Arrivals with Waiting and Tardiness Costs. *Queueing Systems*. 74, [4](#), 369-402. DOI 10.1007/s11134-012-9329-3 [\(pdf\)](#)
- Moka, S. B., Juneja, S. 2013. Regenerative Simulation for Multiclass Open Queueing Networks. In *Proceedings of 2013 Winter Simulation Conference*. *IEEE Press*. 643-654.
- Agarwal, A., & Juneja, S. 2013. Comparing Optimal Convergence Rate of Stochastic Mesh and Least Squares Method for Bermudan Option Pricing In *Proceedings of the 2013 Winter Simulation Conference*, *IEEE Press*. 701-712.
- Murthy, K. R., Juneja, S., Blanchet, J. 2013. Optimal Rare Event Monte Carlo for Markov Modulated Regularly Varying Random Walks. In *Proceedings of the 2013 Winter Simulation Conference*, *IEEE Press*, 564-576.

2012

- S. Juneja, T. Raheja and N. Shimkin. 2012. The Concert Queueing Game with Random Arrival Volume. *Sixth International ICST Conference on Performance Evaluation Methodologies and Tools (VALUETOOLS 2012)*. 317-325. [\(pdf\)](#) *(best paper award)*
- Karthyek R. A. M. and S. Juneja. 2012. State-independent Importance Sampling for estimating large deviation probabilities in heavy-tailed random walks. *Sixth International ICST Conference on Performance Evaluation Methodologies and Tools (VALUETOOLS 2012)*. 127-135. [\(pdf\)](#)
- Dey and S. Juneja. 2012. Incorporating fat tails in financial models using entropic divergence measures [arXiv:1203.0643v1](#)
- Reijsbergen, D.P. and de Boer, P.T. and Scheinhardt, W.R.W. and Juneja, S. 2012. *Some advances in importance sampling of reliability models based on zero variance approximation*. In: *Proceedings of the Ninth International*

Workshop on Rare Event Simulation, RESIM 2012, Trondheim, Norway.
pp. 30-35.

2011

- S. Asmussen, J. Blanchet, S. Juneja and L. R. Nandayapa. 2011. Efficient simulation of tail probabilities of sums of correlated lognormals, *Annals of Operations Research*, 189, 1, 5-23. DOI [10.1007/s10479-009-0658-5](https://doi.org/10.1007/s10479-009-0658-5).
- P. W. Glynn and S. Juneja. 2011. Ordinal optimization: A nonparametric framework. *Proceedings of Winter Simulation Conference*. IEEE Press. 4062-4069.
- S. Dey and S. Juneja. 2011. Efficient estimation of density and probability of large deviations of sum of iid random variables. *Proceedings of Winter Simulation Conference*. IEEE Press. 3805 -3816.
- S. Juneja. 2011. An Introduction to Financial Mathematics. *Math Unlimited: Essays in Mathematics*. Editors: H.N. Ramaswamy, C.S. Yogananda, R. Sujatha, Science Publishers. 191-223 . [pdf](#)
- Dirk P. Kroese, Nahum Shimkin, Joseph Kreimer, Sandeep Juneja: Preface. *Annals of Operations Research* 189_(1): 1-3 (2011)

2010

- R. Jain, S. Juneja and N. Shimkin. 2010. The Concert Queuing Problem: To Wait or To Be Late. *Discrete Events Dynamic Systems*, 21, 103-138. [\(pdf\)](#)
- M. Gordy and S. Juneja. 2010. Nested Simulation in Portfolio Risk Measurement. *Management Science* 56, 10, 1833-1848 [\(pdf\)](#)
- R. Jain, S. Juneja and N. Shimkin. 2010. Queueing for Timely Service: Equilibrium Analysis and Social Efficiency, *MSOM 2010*, SIG Conference.
- S. Dey and S. Juneja. 2010. Multidimensional Fourier Inversion using Importance Sampling with Applications to Options Pricing. *Proceedings of Winter Simulation Conference*. IEEE Press. 2801-2809.
- S. Juneja. 2010. Monte Carlo Methods in Finance: An Introductory Tutorial. *Proceedings of Winter Simulation Conference*. IEEE Press. 95-103.
- M. Gordy and S. Juneja. 2010. Full Monte Carlo simulation of CDO portfolios. *Encyclopedia of Quantitative Finance*. Ed. Rama Cont, Wiley

2009

- S. Juneja and H. Kalra. 2009. Variance Reduction Techniques for Pricing American Options. *Journal of Computational Finance* ([pdf](#)) 12 (3), 79-102, 2009
- S. Juneja and R. Jain. 2009. The Concert/Cafeteria Queuing Problem: A Game of Arrivals. ICST Fourth International Conference on Performance Evaluation Methodologies and Tools. 10.4108/ICST.VALUETOOLS2009.7624. (*best paper award*) ([pdf](#))
- J. Hong and S. Juneja. 2009. Estimating the Mean of a Nonlinear Function of a Conditional Expectation. *Proceedings of Winter Simulation Conference*. IEEE Press 1223-1236. ([pdf](#))
- S. Juneja and L. Ramprasath. 2009. Nested Simulation for Portfolio Losses within a Time Horizon. *Proceedings of Winter Simulation Conference*. IEEE Press. 434-443.

2008

- Bassamboo, S. Juneja and A. Zeevi. 2008. Portfolio Credit Risk with Extremal Dependence' *Operations Research*, 56, 3, 593-606 ([pdf of a draft](#))
- P. Glasserman and S. Juneja. 2008. Uniformly Efficient Importance Sampling for the Tail Distribution of Sums of Random Variables. *Mathematics of Operations Research*, 33 (1) 36-50.[pdf](#)
- S. Juneja. 2008. Optimizing Portfolio Tail Measures: Asymptotics and Efficient Simulation Optimization, *Proceedings of Winter Simulation Conference*. IEEE Press. 621-628. [pdf](#)
- J. Blanchet, S. Juneja and L. R. Nandayapa. 2008. Efficient Tail Estimation for Sums of Correlated Lognormals. *Proceedings of Winter Simulation Conference*. IEEE Press. 617-624 ([pdf](#))
- P. Glynn and S. Juneja. 2008. A Large Deviations View of Asymptotic Efficiency for Simulation Estimators. *Proceedings of 2008 Winter Simulation Conference*, IEEE Press. 396-406 ([pdf](#))

2007

- S. Juneja. 2007. Estimating Tail Probabilities of Heavy Tailed Distributions with Asymptotically Zero Relative Error. *Queueing Systems*, 57, 2-3, 115-127. [\(pdf\)](#)
- Bassamboo, S. Juneja and A. Zeevi. 2007. Inefficiencies of State-Independent Importance Sampling in the Presence of Heavy Tails, *Operations Research Letters*, 35, 2, 251-260 [\(pdf\)](#)
- S. Juneja, R. Karandikar, P. Shahabuddin. 2007. Asymptotics and Fast Simulation for Tail Probabilities of Maximum of Sums of Few Random Variables. *ACM TOMACS*, 17, 2. [\(pdf\)](#)
- S. Andradottir, P. Glasserman, P. Glynn, P. Heidelberger, S. Juneja. 2007. Perwez Shahabuddin, 1962-2005: A Professional Appreciation. *ACM TOMACS*, 17, 2 [\(pdf\)](#)

2006

- Ahamed, V. S. Borkar, S. Juneja. 2006. Adaptive Importance Sampling for Markov Chains using Stochastic Approximation, *Operations Research*, 54,3, 489-504. [\(pdf\)](#)
- A. Bassamboo and S. Juneja. 2006. Optimal Resource Allocation in Two Stage Sampling of Input Distributions. *Proceedings of the 2006 Winter Simulation Conference*, IEEE Press. 216-221.
- M. Gordy and S. Juneja. 2006. Efficient Simulation for Risk Measurement in Portfolio of CDOs. *Proceedings of the 2006 Winter Simulation Conference*, IEEE Press. 749-756.
- S. Ghosh and S. Juneja. 2006. Computing Worst-Case Tail Probabilities in Credit Risk. *Proceedings of the 2006 Winter Simulation Conference*, IEEE Press. 246-254.
- S. Juneja and P. Shahabuddin. 2006. Rare Event Simulation Techniques: An Introduction and Recent Advances. *Handbook in Operations Research and Management Sciences, Volume 13: Simulation*. Chapter 11. Elsevier. Editors: Shane Henderson and Barry Nelson 291-350. [pdf](#)

2005

- S. Juneja and V. Nicola. 2005. Efficient Simulation of Buffer Overflow Probabilities in Jackson Networks with Feedback, *ACM TOMACS*, **15**, 4, 281-315 [pdf](#)
- N. Bolia and S. Juneja. 2005. Monte Carlo Methods for Pricing Financial Options. *Sadhana*, **30**, 347-386. [pdf](#)
- N. Bolia, S. Juneja. 2005. Function-Approximation Based Perfect Control Variates to Price American Options. *Proceedings of the 2005 Winter Simulation Conference*, IEEE Press. 1876-1883. [pdf](#)
- Bassamboo, S. Juneja, A. Zeevi. 2005. Expected Shortfall in Credit Portfolios with Extremal Dependence. *Proceedings of the 2005 Winter Simulation Conference*, IEEE Press. 1850-1858. [pdf](#)
- A. Bassamboo, S. Juneja, A. Zeevi. 2005. Importance Sampling Simulation in Presence of Heavy Tails. *Proceedings of the 2005 Winter Simulation Conference*, IEEE Press. 664-672 [pdf](#)
- S. Juneja. 2005. Adaptive Importance Sampling Techniques for Markov Chains: An Overview. *Operations Research with Economic and Industrial Applications: Recent trends*, Anamaya Publishers, New Delhi, 97-119.

2004

- R. Randhawa and S. Juneja. 2004. Combining Importance Sampling and Temporal Difference Control Variates to Simulate Markov Chains. *ACM TOMACS*, **14**, 1, 1-30. [ps](#)
- V. S. Borkar, S. Juneja, A. A. Kherani. 2004. Performance Analysis Conditioned on Rare Events: An Adaptive Simulation Scheme, *Communications in Information and Systems*, **3**, 4, 259-278.
- P. W. Glynn and S. Juneja. 2004. A Large Deviations Perspective on Ordinal Optimization. *Proceedings of the 2004 Winter Simulation Conference*, IEEE Press. 577-585. [pdf](#)
- N. Bolia, P. Glasserman, S. Juneja. 2004. Function-Approximation-based Importance Sampling for Pricing American Options. *Proceedings of the 2004 Winter Simulation Conference*, IEEE Press. 604-611. [pdf](#)

2003

- V. S. Borkar, S. Juneja, A. A. Kherani, An Adaptive Simulation Scheme for Conditional Performance Analysis, *Proceedings of the International Workshop on IT-Enabled Manufacturing, Logistics and Supply Chain Management*, December 2003, 170-176.
- S. Juneja. 2003. Efficient Rare Event Simulation using Importance Sampling: An Introduction. *Computational Mathematics Modeling and Algorithms*. Narosa publishers, New Delhi, 2003, 357-396. ([ps file: Includes techniques for simulating polling systems](#))

2002

- S. Juneja, P. Shahabuddin. 2002. Simulating Heavy Tailed Processes using Delayed Hazard Rate Twisting, *ACM TOMACS*, 12, 2, 94-118. ([ps](#))
- R. Randhawa and S. Juneja. 2002. Simulating Rare Events by Combining Temporal Difference Methods and Importance Sampling. *Proceedings of ReSim/COP 2002* held in Madrid, Spain. ([PS file of a draft: a zipped file](#))
- S. Juneja and V. Nicola. 2002. Efficient Simulation of Buffer Overflow Probabilities in a Queuing Network, *Proceedings of ReSim/COP 2002* held in Madrid, Spain. ([ps](#))
- A. Kumar, G. Batra, K. Girotra and S. Juneja. 2002. 'Demand Estimation for Delhi Transport Corporation' *Proceedings of National Conference on Transportation Systems* held at IIT Delhi. April 24-26, pp 733-744. Phoenix Publishing House Pvt Ltd. New Delhi.

2001

- S. Juneja. 2001. Importance Sampling and the Cyclic Approach, *Operations Research*, Vol. 49-6, 900-912. ([ps](#))
- S. Juneja, P. Shahabuddin. 2001. Efficient Simulation of Markov Chains with Small Transition Probabilities, *Management Science*, Vol. 47-4, 547-562. ([ps](#))
- S. Juneja, P. Shahabuddin. 2001. A Splitting Based Importance Sampling Algorithm for Fast Simulation of Markov Chains with Small Transition Probabilities, *IEEE Transactions on Reliability*, Vol. 50-3, pp 235-245. ([ps](#))

- A. Bassamboo, M. Gupta and S. Juneja. 2001. 'Efficient Winner Determination Techniques in a single item multiple unit auction'. Proceedings of First IFIP Conference on E-commerce, E-business and E-government, held in Zurich, Switzerland. 417-430. ([ps](#))
- With Johara Shahabuddin, Abhay Chrungoo, Vishu Gupta, Sanjiv Kapoor, Arun Kumar. 2001. Stream-Packing: Resource Allocation in Web Server Farms with a QoS Guarantee. To appear in HIPC Conference Proceedings. Publishers Springer Verlag

1999

- S. Juneja, P. Shahabuddin and A Chandra. 1999. Simulating Heavy Tailed Processes using Delayed Hazard Rate Twisting, *Proceedings of 1999 Winter Simulation Conference*, 420-427.

1994

- C.S. Chang, P. Heidelberger, S. Juneja, P. Shahabuddin. 1994. Effective Bandwidth and Fast Simulation of ATM Intree Networks, *Performance Evaluation* 20, 45-65.

1993

- C. S. Chang, P. Heidelberger, S. Juneja and P. Shahabuddin. 1993. Effective Bandwidth and Fast Simulation of ATM Intree Networks, Proceedings of PERFORMANCE 93 Conference, Rome, Italy.41-58.

1992

- S. Juneja, P. Shahabuddin. 1992. 'Fast Simulation of Markovian Reliability/Availability Models with General Repair Policies', *Proc. of the twenty second Int'l Symp. on Fault-Tolerant Computing*, IEEE Press, 150-159.

Other

- X. Xiong, S. Juneja and M. Fu.2006. Asymptotically Optimal Simulation Allocation under Dependent Sampling. Preprint
- S. Juneja and V. Nicola, Efficient Simulation of Buffer Overflow Probabilities in a Queuing Network, ([ps](#)) TIFR Technical Report STCS-03/01. July 2003
- [SFED: A Rate Control Based Active Queue Management Protocol, A. Kamra, S. Kapila, V. Khurana, V. Yadav, R.Shorey, H. Saran and S. Juneja, IBM IRL Research Report, New Delhi, India, 2000.](#)
- S. Juneja, A.Rajan. 1990. Simulation Study of Renewal Approximations of GI/G/m Queue Departure Stream, Bell Laboratories, TM 4513-910122-01TM.