Peter I. Frazier

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Citizenship: USA

Professional Positions

2021–current Eleanor & Howard Morgan Professor of ORIE, Cornell University

2022–current Senior Staff Applied Scientist, Uber

2015–current Associate Professor, Operations Research and Information Engineering, Cornell University

2017–2021 Staff Data Scientist, Uber

2016–2017 Data Science Manager & Staff Data Scientist, Uber (UberPOOL 2016–2017, Kinetics 2017)

2015–2016 Senior Data Scientist, Uber

2009-2015 Assistant Professor, Operations Research and Information Engineering, Cornell University

For 2000-2005, see Pre-Doctoral Industry Experience below.

Education

Ph.D. Operations Research and Financial Engineering, Princeton University, June, 2009
Thesis: "Knowledge-Gradient Methods for Statistical Learning,"
Advisor: Warren B. Powell.

M.A. Operations Research and Financial Engineering, Princeton University, 2007.

B.S. Physics, Engineering and Applied Sciences, California Institute of Technology, 2000.

Research Interests

I am interested in optimal learning: settings where we learn from data that is time-consuming or expensive to collect, requiring that we make good decisions about how to collect it. This spans machine learning, operations research, and statistics. It includes surveillance testing in public health, design of experiments in medicine and materials science, tuning hyperparameters for machine learning models, the design of e-commerce systems, and many other applications.

I am also interested in having impact through OR practice. At Uber, I helped design the pricing systems used in production and helped deliver significant improvements in business and societal outcomes through innovations in these systems. At Cornell, I led the COVID-19 Mathematical Modeling Team that supported administrative decision-making during the COVID-19 pandemic and helped to design the testing system that allowed Cornell to safely provide residential instruction during the pandemic.

Journal Publications

1. S. Toscano-Palmerin, P.I. Frazier, "Bayesian Optimization with Expensive Integrands" SIAM Journal on Optimization, accepted, https://arxiv.org/abs/1803.08661

2. G.R. Meredith, D.G. Diel, P.I. Frazier, S.G. Henderson, G.A. Koretzky, J. Wan, L.D. Warnick, "Routine Surveillance and Vaccination on a University Campus During the Spread of the Omicron Variant", JAMA Network Open, Accepted.

3. P.I. Frazier, J.M. Cashore, N. Duan, S.G. Henderson, A. Janmohamed, B. Liu, D.B. Shmoys, J. Wan, Y. Zhang "Modeling for COVID-19 College Reopening Decisions: Cornell, A Case Study" 119(2), Proceedings of the National Academy of Sciences, 2022

4. P.I. Frazier, "Fighting the Pandemic with Mathematical Modeling: A Case Study at Cornell University", in *The Bridge*, The National Academies Press, Winter 2021

5. Z.E. Hughes, M.A. Nguyen, J. Wang, Y. Liu, M.T. Swihart, M. Poloczek, P.I. Frazier, M.R. Knecht, T.R. Walsh, "Tuning Materials-Binding Peptide Sequences Towards Gold- and Silver-Binding Selectivity with Bayesian Optimization" 15(11) 18260–18269, ACS Nano, 2021

6. J. Wang, S.C. Clark, E. Liu, P.I. Frazier, "Parallel Bayesian Global Optimization of Expensive Functions" Operations Research, 2020 http://arxiv.org/abs/1602.05149

7. P.I. Frazier, S.G. Henderson, R. Waeber, "Probabilistic Bisection Converges Almost As Quickly As Stochastic Approximation." *Mathematics of Operations Research*, 2019.

8. L. Tallorin, J. Wang, W.E. Kim, S. Sahu, N.M. Kosa, P. Yang, M. C. Thompson, M. K. Gilson, P. I. Frazier, M. D. Burkart, N. C. Gianneschi, "Discovering *de novo* peptide substrates for enzymes using machine learning." *Nature Communications*, 2018

   [Finalist, INFORMS Data Mining Best Student Paper Competition, 2014.]

9. P. Yang, K. Iyer, P.I. Frazier, "Mean Field Equilibria for Resource Competition in Spatial Settings." *Stochastic Systems*, 2018. https://arxiv.org/abs/1707.07919

10. M. Poloczek, H. Herbol, W. Hu, P. I. Frazier, P. Clancy "Efficient Search of a Complex Compositional Space of Hybrid Organic-Inorganic Perovskite Candidates via Bayesian Optimization." *npj (Nature Partner Journals) Computational Materials*, vol 4, issue 1, 2018.

11. W. Han, P. Rajan, P.I. Frazier, B.M. Jedynak, "Bayesian Group Testing under Sum Observations: A Parallelizable 2-Approximation for Entropy Loss." *IEEE Transactions on Information Theory*, vol 63, issue 2, pp 915–933, 2017.

12. J. Xie, P.I. Frazier, S.E. Chick, "Bayesian Optimization via Simulation with Pairwise Sampling and Correlated Prior Beliefs," *Operations Research*, vol 64, no. 2, pp 542–559, 2016.

13. S.N. Pallone, P.I. Frazier, S.G. Henderson, "Coupled Bisection for Root Ordering," *Operations Research Letters*, vol 44, issue 2, pp 165–169, 2016.

14. B. Yang, C. Cardie, P.I. Frazier "A Hierarchical Distance-dependent Bayesian Model for Event Coreference Resolution" *Transactions of the Association for Computational Linguistics*, vol. 3, pp 517-528, 2015. http://arxiv.org/abs/1504.05929

15. I.O. Ryzhov, P.I. Frazier, W.B. Powell, "A New Optimal Stepsize for Approximate Dynamic Programming." *IEEE Transactions on Automatic Control*, vol. 60, no. 03, pp 743-758, 2015.

16. S.J. Gershman, P.I. Frazier, D.M. Blei, "Distance Dependent Infinite Latent Feature Models." *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 37, no. 02, pp 334-345, 2015.

17. P.I. Frazier, "A Fully Sequential Elimination Procedure for Indifference-Zone Ranking and Selection with Tight Bounds on Probability of Correct Selection," *Operations Research*, vol. 62, no. 4, pp 926–942, 2014.

    [Finalist, INFORMS Junior Faculty Interest Group (JFIG) Paper Competition, 2013]

18. J. Xie, P.I. Frazier, "Sequential Bayes-Optimal Policies for Multiple Comparisons with a Known Standard," *Operations Research*, vol. 61, no. 5, pp 1174–1189, 2013.

    [Winner, INFORMS Computing Society Student Paper Prize, 2013]
    [Finalist, INFORMS Junior Faculty Interest Group (JFIG) Paper Competition, 2011]

19. R. Waeber, P.I. Frazier, S.G. Henderson, "Bisection Search with Noisy Responses," *SIAM Journal on Control and Optimization*, vol. 51, no. 3, pp 2261–2279, 2013.

20. S.C. Clark, R. Egan, P.I. Frazier, Z. Wang, "ALE: a Generic Assembly Likelihood Evaluation Framework for Assessing the Accuracy of Genome and Metagenome Assemblies," *Bioinformatics*, vol. 29, no. 4, pp 435–443, 2013.

21. L.H. Lee, E.P. Chew, P.I. Frazier, Q.S. Jia, C.H. Chen "Advances in Simulation Optimization and its Applications" *IIE Transactions*, vol. 45, no. 7, pp 683–684, 2013.

    [One of the three most popular articles published in IIE Transactions in 2013.]

22. A.J. Meltzer, A. Graham, P.H. Connolly, J.K. Karwowski, H.L. Bush, P.I. Frazier D.B. Schneider, "Risk Factors for Early Failure after Peripheral Endovascular Intervention: Application of a Reliability Engineering Approach" *Annals of Vascular Surgery*, vol. 27, no. 1, pp 53–61, 2013.

23. S.E. Chick, P.I. Frazier, "Sequential Sampling for Selection with Economics of Selection Procedures," *Management Science*, vol 58, no 3, pp 550–569, 2012.

24. I.O. Ryzhov, W.B. Powell, P.I. Frazier "The Knowledge-Gradient Algorithm for a General Class of Online Learning Problems," *Operations Research*, vol. 60, pp 180–195, 2012.

25. R. Waeber, P.I. Frazier, S.G. Henderson, "A Framework for Selecting a Selection Procedure," *ACM Transactions on Modeling and Computer Simulation*, vol. 22, no. 3, 2012.

26. B. Jedynak, P.I. Frazier, R. Sznitman, "Twenty Questions with Noise: Bayes Optimal Policies for Entropy Loss," *Journal of Applied Probability*, vol. 49, no. 1, pp 114-136, 2012.

27. M.R.K. Mes, W.B. Powell, P.I. Frazier, "Hierarchical Knowledge Gradient for Sequential Sampling," *Journal of Machine Learning Research*, 12(Oct): 2931–2974, 2011.

28. W. Scott, P.I. Frazier, W.B. Powell "The Correlated Knowledge Gradient for Simulation Optimization of Continuous Parameters Using Gaussian Process Regression," *SIAM Journal on Optimization*, vol. 21, pp 996–1026, 2011.

29. D. Blei, P.I. Frazier, "Distance Dependent Chinese Restaurant Processes," *Journal of Machine Learning Research*, vol. 12, pp 2461–2488, 2011.

30. D. Negoescu, P.I. Frazier, W.B. Powell, "The Knowledge-Gradient Algorithm for Sequencing Experiments in Drug Discovery," *INFORMS Journal on Computing*, vol 23, pp 346–363, 2011.

    [Honorable Mention, INFORMS Doing Good with Good OR, Student Competition, 2009]

31. P.I. Frazier, W.B. Powell, "Consistency of Sequential Bayesian Sampling Policies," *SIAM Journal on Control and Optimization*, vol 49, pp 712–731, 2011.

32. P.I. Frazier, W.B. Powell, "Paradoxes in Learning and the Marginal Value of Information," Decision Analysis, vol 7, pp 327–330, 2010.

33. P.I. Frazier, W.B. Powell, S. Dayanik "The Knowledge-Gradient Policy for Correlated Normal Rewards," *INFORMS Journal on Computing*, vol 21, pp 599–613, 2009.

[Honorable Mention, INFORMS Computing Society Student Paper Prize, 2009]

34. P.I. Frazier, W.B. Powell, S. Dayanik "A Knowledge-Gradient Policy for Sequential Information Collection," *SIAM Journal on Control and Optimization*, vol 47, pp 2410–2439, 2008.

    [Finalist, INFORMS Decision Analysis Student Paper Competition, 2007]

35. D. T. Spayde, T. Averett, D. Barkhuff, D. H. Beck, E. J. Beise, C. Benson, H. Breuer, R. Carr, S. Covrig, J. DelCorso, G. Dodson, K. Dow, C. Eppstein, M. Farkhondeh, B. W. Filippone, P. Frazier, R. Hasty, T. M. Ito, C. E. Jones, W. Korsch, S. Kowalski, P. Lee, E. Maneva, K. McCarty, R. D. McKeown, J. Mikell, B. Mueller, P. Naik, M. Pitt, J. Ritter, V. Savu, M. Sullivan, R. Tieulent, E. Tsentalovich, S. P. Wells, B. Yang, T. Zwart, "Parity violation in elastic electron-proton scattering and the proton's strange magnetic form factor," *Physical Review Letters*, vol 84, pp 1106–1109, 2000.

Conference Publications

36. Z. Lin, R. Astudillo, P.I. Frazier, E. Bakshy "Preference Exploration for Efficient Bayesian Optimization with Multiple Outcomes" *Artificial Intelligence and Statistics (AISTATS)*, 2022

37. R. Astudillo, P.I. Frazier "Thinking inside the box: A tutorial on grey-box Bayesian optimization" *Winter Simulation Conference*, https://arxiv.org/pdf/2201.00272.pdf, 2021

38. Y. Zhang, X. Zhang, P.I. Frazier "Constrained Two-step Look-Ahead Bayesian Optimization" *Neural Information Processing Systems (NeurIPS)*, 2021.

39. R. Astudillo, D. Jiang, M. Balandat, E. Bakshy, P.I. Frazier "Multi-Step Budgeted Bayesian Optimization with Unknown Evaluation Costs" *Neural Information Processing Systems (NeurIPS)*, 2021.

40. R. Astudillo, P.I. Frazier "Bayesian Optimization of Function Networks" *Neural Information Processing Systems (NeurIPS)*, 2021.

41. S. Cakmak, R. Astudillo, P.I. Frazier, E. Zhou, "Bayesian Optimization of Risk Measures" *Neural Information Processing Systems (NeurIPS)*, 2020.

42. R. Astudillo, P.I. Frazier "Multi-Attribute Bayesian Optimization With Interactive Preference Learning" *Artificial Intelligence and Statistics (AISTATS)*, 2020

43. J. Wu, P.I. Frazier, "Practical Two-Step Lookahead Bayesian Optimization" *Neural Information Processing Systems (NeurIPS)*, 2019.

44. R. Astudillo Marban, P.I. Frazier, "Bayesian Optimization of Composite Functions" *International Conference on Machine Learning (ICML)*, 2019.

45. P. Yang, K. Iyer, P.I. Frazier "Information Design in Spatial Resource Competition" *The 15th Conference on Web and Internet Economics (WINE)*, 2019.

46. J. Wu, S. Toscano, A.G. Wilson, P.I. Frazier, "Practical Multi-fidelity Bayesian Optimization of Iterative Machine Learning Algorithms" *Conference on Uncertainty in Artificial Intelligence (UAI)*, 2019.

47. A. Lu, P.I. Frazier, O. Kislev "Surge Pricing Moves Uber's Driver Partners" *19th ACM Conference on Economics and Computation (EC)*, 2018.

48. B. Chen, P.I. Frazier, D. Kempe "Incentivizing Exploration with Heterogeneous Preferences" *Conference on Learning Theory (COLT)*, 2018.

49. S. Toscano-Palmerin, P.I. Frazier, "Effort Allocation and Statistical Inference for 1-Dimensional Multistart Stochastic Gradient Descent", *Winter Simulation Conference (WSC)*, 2018.

50. R. Agarwal, P.I. Frazier "Ephemeral Partially Replicated Databases" *4th International Conference on Artificial Intelligence and Applications (AI)*, 2018

51. J. Wu, M.U. Poloczek, A.G. Wilson, P.I. Frazier, "Bayesian Optimization with Gradients" *Neural Information Processing Systems (NIPS)*, 2017. https://arxiv.org/abs/1703.04389

    [Oral Presentation, NIPS 2017 (1% of submitted papers)]

52. M.U. Poloczek, J. Wang, P.I. Frazier, "Multi-Information Source Optimization" *Neural Information Processing Systems (NIPS)*, 2017. http://arxiv.org/abs/1603.00389

    [Spotlight Paper Presentation, NIPS 2017 (3% of submitted papers)]

53. B. Chen, P.I. Frazier, "Dueling Bandits with Weak Regret" *International Conference on Machine Learning (ICML)*, 2017.

54. S. Toscano-Palmerin, P.I. Frazier, "Stratified Bayesian Optimization" *Proceedings of the 12th International Conference on Monte Carlo and Quasi-Monte Carlo Methods in Scientific Computing (MCQMC)*. 2017 http://arxiv.org/abs/1602.02338

55. J. Wu, P.I. Frazier, "The Parallel Knowledge Gradient Method for Batch Bayesian Optimization" *Neural Information Processing Systems (NIPS)*, 2016.

56. T. Schnabel, T. Joachims, A. Swaminathan, P.I. Frazier "Unbiased Comparative Evaluation of Ranking Functions" *2nd ACM International Conference on the Theory of Information Retrieval (ICTIR)*, 2016.

57. B. Chen, P.I. Frazier "The Bayesian Linear Information Filtering Problem" *IEEE International Conference on Tools with Artificial Intelligence (ICTAI)*, 2016.

58. P. Yang, K. Iyer, P.I. Frazier, "Mean Field Equilibria for Competitive Exploration in Resource Sharing Settings" *25th International World Wide Web Web Conference (WWW)*, 2016.

59. M. Poloczek, J. Wang, P.I. Frazier, "Warm Starting Bayesian Optimization" *Winter Simulation Conference (WSC)*, 2016.

60. W. Hu, P.I. Frazier, "Bayes-Optimal Effort Allocation in Crowdsourcing: Bounds and Index Policies" *19th International Artificial Intelligence and Statistics Conference (AISTATS)*, 2016.

61. P. Rajan, W. Han, R. Sznitman, P.I. Frazier, B.M. Jedynak, "Bayesian Multiple Target Localization" *International Conference on Machine Learning* (ICML), 2015.

62. S. Toscano-Palmerin, P.I. Frazier, "Asymptotic Validity of the Bayes-Inspired Indifference Zone Procedure: the Non-Normal Known Variance Case" *Winter Simulation Conference (WSC)*, 2015.

63. P.I. Frazier, D. Kempe, J. Kleinberg, R. Kleinberg, "Incentivizing Exploration" *15th ACM Conference on Economics and Computation (EC)*, 2014.

    [Best Paper Award, 15th ACM Conference on Economics and Computation, 2014.]

64. W. Hu, P.I. Frazier, J. Xie, "Parallel Bayesian Policies for Finite-Horizon Multiple Comparisons with a Known Standard" *Winter Simulation Conference (WSC)*, 2014.

65. S. Pallone, P.I. Frazier, S.G. Henderson, "Multisection: Parallelized Bisection" *Winter Simulation Conference (WSC)*, 2014.

66. J. Xie, P.I. Frazier, "Upper Bounds on the Bayes-Optimal Procedure for Ranking & Selection with Independent Normal Priors" *Winter Simulation Conference (WSC)*, 2013.

67. R. Sznitman, A. Lucchi, B. Jedynak, P.I. Frazier, P. Fua, "An Optimal Policy for Target Localization with Application to Electron Microscopy," *International Conference on Machine Learning* (ICML), 2013.

68. J. Xie, P. I. Frazier, S. Sankaran, A. Marsden, S. Elmohamed, "Optimization of Computationally Expensive Simulations with Gaussian Processes and Parameter Uncertainty: Application to Cardiovascular Surgery," *50th Annual Allerton Conference on Communication, Control, and Computing*, 2012.

69. P.I. Frazier, B. Jedynak, L. Chen, "Sequential Screening: A Bayesian Dynamic Programming Analysis of Optimal Group-Splitting," *Winter Simulation Conference (WSC)*, 2012.

70. P.I. Frazier, "Tutorial: Optimization via Simulation with Bayesian Statistics and Dynamic Programming," *Winter Simulation Conference (WSC)*, 2012.

71. P.I. Frazier and A.M. Kazachkov, "Guessing Preferences: A New Approach to Multi-Attribute Ranking and Selection," *Winter Simulation Conference (WSC)*, 2011.

72. P.I. Frazier, J. Xie, S.E. Chick, "Bayesian Optimization via Simulation with Correlated Sampling and Correlated Prior Beliefs," *Winter Simulation Conference (WSC)*, 2011.

73. R. Waeber, P.I. Frazier, S.G. Henderson, "A Bayesian Approach to Stochastic Root-Finding," *Winter Simulation Conference (WSC)*, 2011.

    [Best Student Paper (OR/MS focused), Winter Simulation Conference, 2011]

74. R. Waeber, P.I. Frazier, S.G. Henderson, "Performance Measures for Ranking and Selection," *Winter Simulation Conference (WSC)*, 2010.

75. D. Blei, P.I. Frazier, "Distance Dependent Chinese Restaurant Processes," *International Conference on Machine Learning* (ICML), 2010.

76. I.O. Ryzhov, P.I. Frazier, W.B. Powell "On the robustness of a one-period look-ahead policy in multi-armed bandit problems," *International Conference on Computational Stochastics (ICCS)*, 2010.

77. S.E. Chick, P.I. Frazier, "The Conjunction of the Knowledge Gradient and the Economic Approach to Simulation Selection," *Winter Simulation Conference (WSC)*, 2009.

78. P.I. Frazier, W.B. Powell, H.P. Simão, "Simulation Calibration with Correlated Knowledge-Gradients," *Winter Simulation Conference (WSC)*, 2009.

79. P.I. Frazier, W.B. Powell, S. Dayanik, P. Kantor, "Approximate Dynamic Programming in Knowledge Discovery for Rapid Response", *Hawaii International Conference on Systems Science (HICSS)*, 2009.

80. P.I. Frazier, W.B. Powell, "The Knowledge-Gradient Stopping Rule for Ranking and Selection," *Winter Simulation Conference (WSC)*, 2008.

81. P.I. Frazier, A.J. Yu, "Sequential Hypothesis Testing under Stochastic Deadlines," *Neural Information Processing Systems* (NIPS), 2007.

    [Spotlight Paper Presentation, NIPS 2007]

82. P.I. Frazier, W.B. Powell "The Knowledge Gradient Policy for Offline Learning with Independent Normal Rewards," *Proceedings of the IEEE Symposium on Approximate Dynamic Programming and Reinforcement Learning (ADPRL)*, 2007.

Workshop Publications

83. R. Lam, M. Poloczek, P.I. Frazier, K. Willcox, "Advances in Bayesian Optimization with Applications in Aerospace Engineering" *20th AIAA Non-Deterministic Approaches Conference (AIAA SciTech Forum)*, 2018.

84. R. Astudillo Marban, P.I. Frazier, "Multi-Attribute Bayesian Optimization under Utility Uncertainty" *NIPS Workshop on Bayesian Optimization (BayesOpt 2017)*, 2017.

85. J. Wu, P.I. Frazier, "Continuous-Fidelity Bayesian Optimization with Knowledge Gradient" *NIPS Workshop on Bayesian Optimization (BayesOpt 2017)*, 2017.

86. D. Singhvi, S. Singhvi, P.I. Frazier, S.G. Henderson, E. O'Mahony, D.B. Shmoys, D.B. Woodard, "Predicting Bike Usage for New York City's Bike Sharing System," *AAAI-15 Workshop on Computational Sustainability*, 2015.

87. X. Zhao, P.I. Frazier "A Markov Decision Process Analysis of the Cold Start Problem in Bayesian Information Filtering," *NIPS Workshop on Personalization: Methods and Applications*, 2014.

88. S. Zhang, P. Hanagal, P.I. Frazier, A.J. Meltzer, D.B. Schneider, "Optimal Patient-specific Postoperative Surveillance for Vascular Surgery," *7th INFORMS Workshop on Data Mining and Health Informatics* (DM-HI 2012), 2012.

Book Chapters

89. P.I. Frazier, "Bayesian Optimization." *INFORMS Tutorials*, INFORMS, 2018.
arxiv 1807.02811

90. P.I. Frazier, J. Wang, "Bayesian Optimization for Materials Design." *Information Science for Materials Discovery and Design*, Springer Series in Materials Science, Vol. 225, 2016.
arxiv 1506.01349

91. P.I. Frazier, "Decision-Theoretic Foundations of Simulation Optimization," *Wiley Encyclopedia of Operations Research and Management Science*, John Wiley & Sons, 2011.

92. P.I. Frazier, "Learning with Dynamic Programming," *Wiley Encyclopedia of Operations Research and Management Science*, John Wiley & Sons, 2011.

93. W. B. Powell, P.I. Frazier, "Optimal Learning," in *TutORials in Operations Research*, INFORMS, 2008.

Journal Papers in Review

94. Z. Cosenza, R. Astudillo, P.I. Frazier, K. Baar, D.E. Block, "Multi-Information Source Bayesian Optimization of Culture Media for Cellular Agriculture"

95. X. Zhang, P.I. Frazier "Restless Bandits with Many Arms: Beating the Central Limit Theorem"

96. J. Wan, Y. Zhang, P.I. Frazier "Correlation Improves Group Testing"

97. J. Wan, C.L. Cazer, M.E. Clarkberg, S.G. Henderson, S.E. Lee, G. Meredith, M. Osman, D.B. Shmoys, P.I. Frazier "Boosters protect against SARS-CoV-2 infections in young adults during an Omicron-predominant period" https://www.medrxiv.org/content/10.1101/2022.03.08.22272056v1.full.pdf

98. X. Zhang, A. Megahed, P.I. Frazier, "Dynamic Pricing with Long-Term Relationships"

99. Y. Lin, Y. Ren, J. Wan, J.M. Cashore, J. Wan, Y. Zhang, P.I. Frazier, E. Zhou, "Group Testing Enables Asymptomatic Screening for COVID-19 Mitigation: Feasibility and Optimal Pool Size Selection with Dilution Effects" https://arxiv.org/pdf/2008.06642.pdf

100. F. Castro, P.I. Frazier, H. Ma, H. Nazerzadeh, C. Yan, "Matching Queues, Flexibility and Incentives," https://arxiv.org/pdf/2006.08863.pdf

101. M. Cashore, L. Kumarga, P.I. Frazier, "Optimal Multi-Step Bayesian Optimization for One-Dimensional Level Set Estimation" in revision for resubmission. https://arxiv.org/abs/1607.03195

102. S. Pallone, P.I. Frazier, S.G. Henderson, "Bayes-Optimal Entropy Pursuit for Choice-Based Active Preference Learning" in revision for resubmission. https://arxiv.org/abs/1702.07694

Technical Reports

103. J.M. Cashore, X. Zhao, A.A. Alemi, Y. Liu, P.I. Frazier, "Clustering via Content-Augmented Stochastic Blockmodels" http://arxiv.org/pdf/1505.06538v1.pdf

104. D. Negoescu, P.I. Frazier, W.B. Powell, "Optimal Learning Policies for the Newsvendor Problem with Censored Demand and Unobservable Lost Sales." http://people.orie.cornell.edu/pfrazier/pub/learning_newsvendor.pdf

105. B. Chen, P.I. Frazier, "Dueling Bandits with Dependent Arms" https://arxiv.org/abs/1605.08838

Honors & Awards

Early Career / Young Investigator Awards

NSF CAREER Award, 2012.

Air Force Office of Scientific Research Young Investigator Award, 2010.

Best Paper Awards

Best Paper Award, 15th ACM Conference on Economics and Computation, 2014.
for P.I. Frazier, D. Kempe, J. Kleinberg, R. Kleinberg, "Incentivizing Exploration."

Finalist, INFORMS Junior Faculty Interest Group (JFIG) Paper Competition, 2013.
for P.I. Frazier, "A Fully Sequential Elimination Procedure for Indifference-Zone Ranking and Selection with Tight Bounds on Probability of Correct Selection."

Finalist, INFORMS Junior Faculty Interest Group (JFIG) Paper Competition, 2011.
for J. Xie, P.I. Frazier, "Sequential Bayes-Optimal Policies for Multiple Comparisons with a Control."

Honorable Mention, INFORMS Computing Society Student Paper Prize, 2009.
for P.I. Frazier, W.B. Powell, S. Dayanik, "The Knowledge-Gradient Policy for Correlated Normal Rewards."

Honorable Mention, INFORMS Doing Good with Good OR, Student Competition, 2009.
for D. Negoescu, P.I. Frazier, W.B. Powell, "The Knowledge-Gradient Algorithm for Sequencing Experiments in Drug Discovery."

Finalist, INFORMS Decision Analysis Society Student Paper Competition, 2007.
for P.I. Frazier, W.B. Powell, S. Dayanik, "A Knowledge-Gradient Policy for Sequential Information Collection."

Best Paper Awards, won by students under supervision

Winner, Applied Probability Society Student Paper Prize, 2021
for X. Zhang, P.I. Frazier, "Restless Bandits with Many Arms: Beating the Central Limit Theorem"

Finalist, INFORMS Undergraduate Operations Research Prize Competition, 2020
for B. Shah, R. Astudillo, P.I. Frazier, "Mixed Integer Linear ProgrammingUnder Preference Uncertainty."

First place (tie), INFORMS Undergraduate Operations Research Prize Competition, 2015
for M. Cashore, L. Kumarga, P.I. Frazier, "Multi-Step Bayesian Optimization for One-Dimensional Feasibility Determination."

Finalist, INFORMS Data Mining Best Student Paper, 2014
for J. Wang, M.D. Burkart, P.I. Frazier, N.Gianneschi, M.K. Gilson, N. Kosa, L. Tallorin, P. Yang, "Finding Short Peptide Substrates using Bayesian Active Learning."

INFORMS Computing Society Student Paper Prize, 2013.
for J. Xie, P.I. Frazier, "Sequential Bayes-Optimal Policies for Multiple Comparisons with a Control."

Best Student Paper (OR/MS focused), Winter Simulation Conference, 2011.
for R. Waeber, P.I. Frazier, S.G. Henderson, "A Bayesian Approach to Stochastic Root-Finding."

Honorable Mention, INFORMS Doing Good with Good OR Student Paper Competition, 2009.
for D. Negoescu, P.I. Frazier, W.B. Powell, "The Knowledge-Gradient Algorithm for Sequencing Experiments in Drug Discovery."

Best Project and Presentation Awards, won by students under supervision

Silent Hoist and Crane Award, 2nd Place, Pitney Bowes MEng team, Project Advisor, 2018.

Best Presentation Award, Tobias Schnabel, ACM International Conference on the Theory of Information Retrieval (ICTIR), 2016, for T. Schnabel, T. Joachims, A Swaminathan, P.I. Frazier, "Unbiased Comparative Evaluation of Ranking Functions"

Silent Hoist and Crane Award, 2nd Place, Walmart.com MEng team, Project Advisor, 2014.

Finalist, Capital One Statistics Modeling Competition, Project Advisor, 2012.

Silent Hoist and Crane Award, 1st Place, Walmart.com MEng team, Project Advisor, 2011.

Other Research Awards

Cornell College of Engineering Research Excellence Award, 2019.
Awarded to 7 out of the 250+ tenure-track faculty in Cornell's College of Engineering

Oral Presentation (1% of submitted papers), Neural Information Processing Systems, 2017.
for J. Wu, M.U. Poloczek, A.G. Wilson, P.I. Frazier, "Bayesian Optimization with Gradients."

Spotlight Paper Presentation (3% of submitted papers), Neural Information Processing Systems, 2017.
for M.U. Poloczek, J. Wang, P.I. Frazier, "Multi-Information Source Optimization."

Spotlight Paper Presentation, Neural Information Processing Systems, 2007.
for P.I. Frazier, A.J. Yu, "Sequential Hypothesis Testing under Stochastic Deadlines."

Nominated for the Intel Early Career Faculty Honor Program, 2012

Cornell Center for a Sustainable Future Faculty Fellow, 2010–current

3rd Place Prize, Interactive Brokers Collegiate Trading Olympiad, 2008

Gordon B. and Nancy R. Stewart, Jr. Fellowship, 2006

Princeton University Graduate Fellowship, 2005

Caltech Summer Undergraduate Research Fellowship, 1999

Teaching & Service Awards

Tompkins Chamber/Tompkins Trust Company Community Hero of the Month, for data science work protecting Tompkins County during the COVID-19 pandemic, May 2021

Winter Simulation Conference Outstanding Reviewer Award, 2019

Professor of the Year, 2018 (Awarded by the Cornell ORIE undergraduate INFORMS chapter)

International Conference on Machine Learning (ICML) Reviewer Award, 2015

Merrill Scholar Most Inspiring Cornell Professor, Named by Li Wang, 2015

Cornell College of Engineering Sonny Yau '72 Excellence in Teaching Award, 2014

Meritorious Service Award, Operations Research, 2013

Reviewer Award, Neural Information Processing Systems (NIPS), 2013

Cornell College of Engineering Sonny Yau '72 Excellence in Teaching Award, 2011

Outstanding Reviewer Award, IEEE Transactions on Automatic Control, 2010

Funding

External Funding

Air Force Office of Scientific Research, "Unraveling the Mechanisms of Ice Nucleation and Anti-Icing Through an Integrated Multiscale Approach", F. Paesani (PI, UCSD), with co-PIs V. Molinero (Utah), B. Peters (UIUC), M.J. Shultz (Tufts), S. Han (UCSB), M. Burkart (UCSD), S. Sibener (UChicago) $667,292 (Cornell budget), 5/1/2020–4/30/2025

Air Force Office of Scientific Research, "Decentralized Bayesian Multi-Agent Multi-Target Search, Localization and Tracking", (PI), with A. Megahed (IBM), F. Zhang (Georgia Tech), E. Zhou (Georgia Tech). $1,453,909, 8/1/2019–7/31/2022.

NSF CAREER Award, "Methodology for Optimization via Simulation: Bayesian Methods, Frequentist Guarantees, and Applications to Cardiovascular Medicine," $400,000. 7/1/2013–6/30/2018.

Air Force Office of Scientific Research Young Investigator Program, "Decision Theoretic Methods for Simulation Optimization," $362,005. 6/15/2011–6/15/2014.

Air Force Office of Scientific Research, "Optimal Learning for Efficient Experimentation in Nanotechnology and Biochemistry", with W.B. Powell (PI, Princeton). $378,898 (Cornell budget). 11/15/2015–11/14/2017.

Air Force Office of Scientific Research, "A Unified and Algorithmic Framework for Managing Multiple Information Sources of Multi-Physics Systems" with K. Willcox (PI, MIT), D. Allaire (MIT), J. Martins (Texas A&M), Y. Marzouk (MIT), M. Mignolet (ASU), D. Wolpert (Sante Fe Institute). $398,454 (Cornell budget), 1/1/2015–12/31/2019

National Science Foundation, "Collaborative Research: Optimal Learning for Processing Organic Semiconductor Materials" with P. Clancy (co-PI, Cornell), L. Loo (co-PI, Princeton). $338,798. 1/1/2016–12/31/2018

Air Force Office of Scientific Research, "Bio-nanocombinatorics to Achieve Precisely-Assembled Multicomponent, Functional Hybrid Nanomaterials," $14,574 (Cornell budget) with P. Prasad (PI, Buffalo), M. Knecht (co-PI, Miami), M. Swihart (co-PI, Buffalo), T.R. Walsh (co-PI, Deakin). 1/1/2016–4/30/2016.

National Science Foundation "IIS BIGDATA: Collaborative Research: Discovery and Social Analytics for Large-Scale Scientific Literature" with P. Kantor (PI, Rutgers), D. Blei (Princeton), P. Ginsparg (Cornell), T. Joachims (Cornell). $2,157,417. 01/01/2013–12/31/2015.

Air Force Office of Scientific Research, "Optimal Learning for Efficient Experimentation in Nanotechnology and Biochemistry", with W.B. Powell (PI, Princeton). $1,915,534. 7/1/2012–6/30/2015.

National Science Foundation, "IIS EAGER: Adaptive Methods for Scalable Dissemination and Retrieval of Scientific Information", with P. Kantor (PI, Rutgers), D. Blei (Princeton), P. Ginsparg (Cornell), T. Joachims (Cornell). $299,501. 8/15/2011–7/31/2012.

Verizon Wireless, "Driving Business Value through Supply Chain Analytics," with P. Jackson (PI), J. Muckstadt, D. Shmoys, H. Topaloglu, P. Rusmevichientong, O. Gao, and K. Caggiano. $499,095. 12/1/2009–11/30/2010.

Internal Funding

Atkinson Center for a Sustainable Future, "Crowd Sourcing of Rangeland Vegetation Conditions for Climate Risk Management Amongst East African Pastoralists," with C. Gomes (PI), C. Barrett, and S. DeGlo-

ria. $142,792. 7/1/2014–10/31/2015.

Planning Grants for Collaborations Between Cornell University-Ithaca and Weill Cornell Medical College Faculty, "Modeling Reliability and Failure of Endovascular Abdominal Aortic Aneurysm Repair" with D.B. Schneider (PI) and A. Meltzer. $5,000. 6/1/2012-5/30/2013.

Cornell Center for a Sustainable Future, "Replacing Antibiotic Therapy in the Food Animal Industry with Bacteriophage Therapy," with R. Bicalho (PI) and T. Joachims. $100,000. 9/1/2010-1/1/2012.

Engineering Learning Initiatives, "Optimal Timing of Patient Follow-up after Endovascular Aneurysm Repair," $1,080. 5/15/2012–8/31/2012

Engineering Learning Initiatives, "Optimal Timing of Patient Follow-up after Endovascular Aneurysm Repair," $1,080. 5/15/2012–8/31/2012

Engineering Learning Initiatives, "Statistical and Economic Analysis for Bacteriophage Therapy" $3,000. 5/15/2010–8/31/2010

Academic Service

Editorial and Reviewing

Associate Editor, Operations Research, 2012–current

Senior Program Committee, AAAI, 2022

Associate Editor, IIE Transactions, Operations Engineering & Analysis, Optimization and Simulation Areas, 2013–2021

Associate Editor, ACM TOMACS, 2013–2021

Senior Program Committee, EC, 2021

Senior Program Committee, AAAI, 2020

Senior Program Committee, ICML, 2020

Senior Program Committee, EC, 2019

Proceedings Editor, Winter Simulation Conference, 2016

Senior Program Committee (Area Chair), AISTATS, 2015

Editor, IIE Transactions Special Issue on Simulation Optimization and its Applications, 2011-2012.

External reviewer for Los Alamos National Lab (LANL) Laboratory Directed Research and Development grant (2015)

Reviewer/panelist for NSF (2011-2013, 2018), AFOSR (2011-2012, 2014-2016, 2019), and UKRI Engineering and Physical Sciences Research Council (2018).

Reviewer for the following journals & conferences in OR, MS & statistics:
Management Science (2009-2012), Operations Research (2010-2017), Annual Meeting of the Society for Medical Decision Making (2013), ACM Transactions on Modeling and Computer Simulation (2011-2014), Chemical Reviews (2015-2016), Computational Optimization and Applications (2014-2015), European Journal of Operations Research (2010), IEEE Transactions on Automatic Control (2008-2010, 2013), IIE Transactions (2010-2012), IIE Transactions on Healthcare Systems Engineering (2011), INFORMS Journal on Computing (2011,2014-2015), Journal of Applied Probability (2012), Journal of the American Statistical Association (2009-2011), Manufacturing and Service Operations Management (2010), Mathematical Finance (2011), Mathematics of Operations Research (2012,2014), Naval Research Logistics (2009-2010,2013-2014), Optimization Letters (2011), Operations Research Letters (2014), Second International Workshop on Computational Stochastics (2011), Wiley Encyclopedia of Operations Research and Management Science (2010), Winter Simulation Conference (2012-2015, 2017–18, 2020).

Reviewer / program committee for the following journals & conferences in machine learning:
Conference on Learning Theory (2012-2013), International Conference on Machine Learning (2010-2015, 2018), Information Retrieval (2011), Neural Information Processing Systems (2009–2010, 2012–2014, 2018), Journal of Artificial Intelligence Research (2016), Journal of Machine Learning Research (2013-2014, 2018).

Program Committee for the following workshops: NIPS Workshop on Bayesian Optimization in Theory and Practice (2013), NIPS Workshop on Bayesian Optimization and Decision Making (2012), NIPS Workshop on Bayesian Optimization, Experimental Design and Bandits (2011), INFORMS Simulation Society Research Workshop, 2011, Second International Workshop on Computational Stochastics (2011),

Reviewer for AMS Mathematical Reviews (2012–2014).

Service to Professional Societies

INFORMS Applied Probability Society Student Paper Prize Committee, 2022

INFORMS Doing Good with Good OR Competition Committee, 2020-2023

INFORMS Journal on Data Science, Editor-in-Chief Search Committee, 2019–2020

INFORMS Simulation Society Secretary, 2014–2016.

INFORMS Applied Probability Society Council, 2013–2015.

INFORMS Simulation Society Council, 2012–2014.

Nicholson Prize Committee, 2012–2013.

INFORMS Health Application Section Student Paper Award Committee, 2013.

INFORMS Computing Society Student Paper Award Committee, 2011-12.

Session Organizer

Applied Probability Society Conference (2011), Canadian Operations Research Society Conference (2012, 2015), Modeling Optimization Theory and Applications (2012, 2014), INFORMS Annual Meeting (2010–2015, 2021-22), INFORMS Computing Society Conference (2013,2015), INFORMS Healthcare Conference (2011,2013), INFORMS Optimization Society Conference (2012), Winter Simulation Conference (2012–2013,2015)

Cornell Service

Lead, Cornell COVID-19 Modeling Team (March 2020–current)

Multi-investigator Intercampus (Ithaca / Weil) Seed Grant Study Section (October 2020)

ORIE Curriculum committee (Fall 2017–Spring 2018)

ORIE Colloquium organizing committee (Fall 2009–Spring 2015)

CAM Colloquium organizing committee (Fall 2010–Summer 2013)

Judge and team advisor in ORIE MEng case studies (Fall 2009–Spring 2015, Fall 2018)

MEng admissions, reading applications (Spring 2010–Spring 2015, Spring 2019)

PhD admissions committee (Spring 2013, 2014, 2015)

Research Information Technology Committee (2011)

Cornell Graduate Field Memberships

Operations Research and Information Engineering

Applied Mathematics

Statistics

Computational Science and Engineering

Membership in Professional Societies

INFORMS member, 2008–current.

SIAM member, 2007–current.

ACM member, 2015–current.

Other Service

External PhD Committee Memmber, Gustavo Malkomes (advisor Roman Garnett), Washington University in St. Louis, 2018–2019.

External Supervision of PhD Defense, Raphael Sznitman (advisor Gregory Hager, co-advisor Bruno Jedynak), Johns Hopkins University, 2011.

Graduate Engineering Council, Princeton University, 2006-2007.

PhD and Postdoctoral Research Supervision

Postdoctoral Researchers Supervised

Matthias Poloczek (Jan 2016 — May 2017)
First position: University of Arizona, Assistant Professor

Graduated PhD Students

Saul Toscano Palmerin (2019)
Thesis: Grey-Box Bayesian Optimization: Improving Performance by Looking Inside the Black-Box
First position: Microsoft

Pu Yang (co-advised with Kris Iyer, 2019) Thesis: Spatial Resource Competition Games
First position: Facebook

Jian Wu (co-advised with Jim Dai, 2017)
Thesis: Knowledge Gradient Methods for Bayesian Optimization.
First position: AQR Capital Management

Bangrui Chen (2017)
Thesis: Adaptive Preference Learning with Bandit Feedback: Information Filtering, Dueling Bandits and Incentivizing Exploration.
First position: Two Sigma

Stephen Pallone (co-advised with Shane Henderson, 2017)
Thesis: Adaptive Bayes-Optimal Methods for Stochastic Search with Applications to Preference Learning.
First position: Uber

Weici Hu (2017)
Thesis: Sequential Resource Allocation under Uncertainty: An Index Policy Approach.
First position: Google

Jialei Wang (2016)
Thesis: Bayesian Optimization with Parallel Function Evaluations and Multiple Information Sources:

Methodology with Applications in Biochemistry, Aerospace Engineering, and Machine Learning.
First position: IBM.

Xiaoting Zhao (2015)
Thesis: Exploration vs. Exploitation in the Information Filtering Problem and its Application in arXiv.org.
First position: Infor Dynamic Science Labs.

Jing Xie (2014)
Thesis: Bayesian Designs for Sequential Learning Problems.
First position: American Express.

Rolf Waeber (Co-advised with Shane G. Henderson, 2013)
Thesis: Probabilistic Bisection Search for Stochastic Root-finding
First position: Cantor Fitzgerald.

Scott Clark (2012)
Thesis: Parallel Machine Learning Algorithms in Bioinformatics and Global Optimization.
First position: Yelp.
Forbes 30-Under-30, Enterprise Tech, 2016

Current PhD Students

Raul Astudillo Marban

Massey Cashore (co-advised with Eva Tardos)

Xiangyu Zhang

Yunxiang (Duke) Zhang

Jiayue Wan

Yujia Zhang

Poompol Buathong

Undergraduate Research Supervision

All students are Cornell undergraduates unless otherwise noted.

Henry Robbins, Fall 2010–current (first position: Uber)

Bonnie Akhavan , Fall 2010–current (first position: MIT graduate program)

Bhavik Shah, Spring 2020–Spring 2021 (first position: Stanford graduate program)

Krista Sandercock, Fall 2014–Spring 2014 (first position: ExxonMobil)

John Paton, Fall 2014

Max Berman, Summer 2014–Fall 2014

Li Wang, Summer 2014–Spring 2015 (first position: MIT PhD program)

John (Massey) Cashore [Waterloo undergraduate], Summer 2014–Spring 2015

Yujia Liu, Spring 2014–Spring 2015

Arya Viswanathan, Spring 2014–Spring 2015

Christina Hardin, Spring 2014, Spring 2015.

Saketh Are, Spring 2014

Lemuel Kumarga, Fall 2013–Spring 2014 (first position: BlackRock)

Divya Singhvi, Fall 2013–Spring 2015 (first position: MIT PhD program)

Somya Singhvi, Fall 2013–Spring 2015 (first position: MIT PhD program)

Pu Yang [Cornell MEng], Summer 2013–Spring 2014 (first position: Cornell ORIE PhD program)

Saurabh Arora [Cornell MEng], Summer 2013

Junbao Li, Spring 2013–Fall 2013

Darlin Alberto, Spring 2013 (first position: SinglePlatform)

Guangyu (Paul) Liu, Fall 2012–Spring 2014

Pranav Hanagal, Spring 2012–Summer 2012 (first position: University of Minnesota PhD program)

Michael Dezube, Spring 2012 (first position: Google)

Rutna Gadh, Spring 2012

Andrew Sung, Fall 2011–Spring 2012 (first position: Booz Allen Hamilton)

Zachary Owen, Spring 2010–Spring 2011 (first position: MIT ORC PhD program)

Aleksandr Kazachkov, Fall 2010–Spring 2011 (first position: CMU ACO PhD program)

Diana Negoescu [Princeton undergraduate], Fall 2008–Spring 2009 (first position: Stanford MS&E PhD program)

Teaching

Information Systems and Analysis (ORIE 3800), Fall 2011, 2012, junior undergraduate level.
Topics: Value of information and its use in large-scale systems, information economics.

Practical Tools in Operations Research, Machine Learning and Data Science (ORIE 3120), Spring 2019, 2021 sophomore/junior undergraduate level.
Topics: Software tools for data manipulation and simulation (SQL, Visual Basic, R, GIS) and mathematical methods and models (inventory management, queuing systems, linear regression, logistic regression, forecasting, design of experiments) with a focus on their use in industry.

Industrial Data and Systems Analysis (ORIE 3120), Spring 2011–2015, 2018 sophomore/junior undergraduate level.
Co-taught with Prof. Peter Jackson 2011–2013, 2015. Taught solo 2014 and 2018.
Topics: Database and statistical techniques for data mining, graphical display, and predictive analysis in the context of industrial systems.

Simulation (ORIE 6580), Fall 2010, Fall 2014, PhD level.
Topics: Monte Carlo and discrete-event simulation, emphasizing underlying theory.

Monte Carlo Methods for Financial Engineering (ORIE 5582), Spring 2010, 2011, 2012, 2013, Masters level.
Topics: Variance reduction, discretization, sensitivities, derivative pricing and risk management.

Optimal Learning (ORIE 6750), Fall 2009, 2013, 2020, PhD level.
Topic: The efficient collection of information for decision-making, emphasizing sequential problems.

Applied ORIE & IT Project (ORIE 5980), 2009-10, 2010-11, 2011-12, 2013–14, 2014–15, 2017-18, Masters level.
Topic: Two-semester team-based project class with an industrial sponsor.
Industrial Sponsors: Cayuga Medical Center (2009-2010), Walmart.com (2010-2011, 2011-2012).
Awards: In the Silent Hoist and Crane Competition, the 2011 Walmart.com team placed 1st, and the 2014 team placed 2nd.

Applied Financial Engineering Project (ORIE 5961), Fall 2012, Masters level.
Topic: One-semester team-based project with a sponsor from the financial industry.
Sponsor: Guggenheim Partners.

Software Systems

Metrics Optimization Engine (MOE), https://github.com/Yelp/MOE
A Bayesian global optimization engine for real-world metric optimization. Used internally by the tech startup Yelp to optimize tunable parameters in algorithms that deliver content to users.
Co-developed with engineers at Yelp: Scott Clark (Yelp), Eric Liu (Yelp), Deniz Oktay (Yelp & MIT), Norases Vesdapunt (Yelp & Stanford), Jialei Wang (Yelp & Cornell).
Github usage metrics (updated 12/04/2014): 400 stars, 22 forks, $\geq 6,000$ unique visits.

My arXiv, http://my.arxiv.org
A personalized recommender system for the online repository of scholarly papers, arXiv.org.
Co-developed with Vladimir Menkov (Rutgers), David Blei (Princeton), Paul Ginsparg (Cornell), Thorsten Joachims (Cornell), Paul Kantor (Rutgers), Darlin Alberto (Cornell). Alex Amini (Cornell), Massey Cashore (Waterloo), Laurent Charlin (Princeton), Ziyu Fan (Cornell), Akilesh Potti (Cornell), Karthik Raman (Cornell), Xiaoting Zhao (Cornell).

Industry Collaborations

MITRE Corporation, Masters in Engineering project, 2020-2021.

Pitney Bowes, Masters in Engineering project, 2018-2020.

Meta, joint research collaboration, 2019-current.

Uber, joint research collaboration, 2015-current.

SigOpt, joint research collaboration, 2014-current.

IBM, joint research collaboration, 2012-current.

Yelp.com, joint research collaboration, 2013-2015.

Nature Source Genetics, consulting, 2012.

Guggenheim Partners, Masters in Engineering project, 2012.

Jane Street Capital, consulting, 2011.

Verizon Wireless, funded research project (see Funding section), 2010.

Walmart.com. Masters in Engineering projects, 2010-11, 2011-12, 2013-14.
[The 2011-12 MEng team won the Silent Hoist and Crane Award. See Awards section.]

Cayuga Medical Center. Masters in Engineering project, 2009-2010.

Pre-Doctoral Industry Experience

Senior Software Developer, NCR, Teradata Division, Rancho Bernardo, CA, February 2004 – August 2005.

Software Developer, Wirecache, San Diego, CA, April 2001–January 2004.

Co-founder and Software Developer, ViaWorks, Glendale, CA, February 2000–March 2001.

Presentations

Plenaries and Keynotes

"Fighting COVID-19 with Data: A Case Study at Cornell University", Young Researchers Workshop, Cornell University, October 2021

"Grey-Box Bayesian Optimization for AutoML", KDD 2021 AutoML Workshop, September 2021

"Controlling COVID-19 at Cornell University", COVID Community Action Summit, New England Complex Systems Institute, January 2021.

"Fighting COVID-19 with Testing: Cornell's Reopening and Beyond" Smart-City Operations and Analytics Conference, virtual, October 2020

"Grey-Box Bayesian Optimization for AutoML & More" 6th ICML Workshop on Automated Machine Learning (AutoML 2019), Long Beach CA, June 2019.

"Bridging the Gap from Academic Research to Industry Impact" Titan of Simulation, Winter Simulation Conference, Gothenburg Sweden, December 2018.

"Providing Reliable Transportation at Uber" Transportation Science and Logistics Conference, Chicago IL, July 2017.

"Bayesian Optimization in the Tech Sector: The Parallel Knowledge Gradient Method, and Experiences at Uber, Yelp, and SigOpt" 12th International Conference on Monte Carlo and Quasi Monte Carlo Methods in Scientific Computing (MCQMC), Palo Alto CA, August 2016.

"Learning and Stochastic Optimization in the Tech Sector: Yelp and Uber" INFORMS Optimization Society Conference, Princeton NJ, March 2016.

Industry Talks

"Grey-box Bayesian Optimization" Google BayesOpt Speaker Series, Google, June 2021

"Reopening Cornell During the COVID-19 Pandemic", Rides Science Jam, Uber, April 2021

"Knowledge Gradient Methods for Bayesian Optimization" Secondmind, virtual, October 2020

"Defeating COVID-19 with Pooled Testing" Uber, virtual, June 2020

"Multi-Information Source Bayesian Optimization" Amazon, Seattle WA, February 2020.

"Grey-box Bayesian Optimization" Adaptive Experimentation Workshop, Facebook, New York City, Feb 2020.

"Bayesian Optimization" Two Sigma, New York City NY, June 2019.

"Data Science Lessons from Uber" Pitney Bowes, Shelton CT, May 2019.

"Bayesian Optimization" D.E. Shaw, New York City NY, March 2018.

P. Frazier and A. Lu, "Chasing Surge: Real-Time Effects of Surge Pricing for Uber's Driver Partners" Uber Marketplace Optimization Data Science Symposium, Uber, San Francisco CA, January 2018.

"An Introduction to Exploration vs. Exploitation: Reinforcement Learning, Multi-Armed Bandits, and Active Learning" American Express, New York NY, September 2017.

"Bayesian Optimization in the Tech Sector and Beyond" IBM Research Accelerated Discovery Forum Distinguished Speaker Series, Accelerated Discovery Lab, IBM Research — Almaden, San Jose CA, January 2017.

"A Tutorial on Bayesian Optimization" Quora, Mountain View, CA, November 2015.

"Things I've done and things I'd like to do" Uber, San Francisco CA, January 2015.

"Information Filtering for arXiv.org." Yelp.com, San Francisco, December, 2013.

"Bayesian Methods for Simulation Optimization." 3M Research Center, St. Paul MN, October 2013.

"Bayesian Methods for Simulation Optimization." IBM T.J. Watson Research Center, Yorktown Heights NY, August 2013.

"Optimizing Time-consuming Objective Functions: Case Studies in Drug Development and Simulation Calibration." Department of Energy, Joint Genome Institute, June 2011.

"Optimal Learning: an Overview" Department of Energy, Joint Genome Institute, June 2010.

"Knowledge-Gradient Methods for Statistical Learning" Lawrence Livermore National Labs, Dec 2008.

Tutorials

"Thinking inside the box: A tutorial on grey-box Bayesian optimization", Winter Simulation Conference, Phoenix AZ, December 2021.

"Accelerating Molecular Discovery with Bayesian Optimization: A Tutorial" Soft Matter Seminar, Cornell University, Ithaca NY, October 2021.

"Bayesian Optimization", Masterclass lecture series, STOR-i, Lancaster University, Lancaster UK (virtual), March 2020.

"Tutorial: Bayesian Optimization." INFORMS Tutorial, INFORMS Annual Meeting, Phoenix AZ, November 2018

Masterclass lecture series; "Machine Learning for Optimization" (day 1); "Machine Learning & Sequential Decision-Making" (day 2); "Coding for Researchers" (day 3). STOR-i, Lancaster University, Lancaster UK, January 2014.

"Tutorial: Optimization via Simulation with Bayesian Statistics and Dynamic Programming," Advanced Tutorials Track, Winter Simulation Conference, Berlin, December 2012.

"Tutorial: Bayesian Methods for Global and Simulation Optimization." INFORMS Tutorial, INFORMS Annual Meeting, Charlotte NC, November 2011

Departmental Seminars

"Dynamic Pricing Provides Robust Equilibria for Ridesharing" Industrial Mathematics and Statistics Seminar, Purdue University, January 2022

"Fighting COVID-19 at Cornell University", Artificial Intelligence for Pandemics (AI4PAN) Seminar, University of Queensland, September 2021

"Fighting COVID-19 with Data: A Case Study at Cornell University", School of Management Seminar, Yale University, November 2021

"Dynamic Pricing Provides Robust Equilibria for Ridesharing" Industrial Mathematics and Statistics Seminar, Purdue University, January 2022

"Grey-box Bayesian Optimization" Laboratory of Informatics, Modeling and Optimization of Systems (LIMOS), July 2021

"Fighting COVID-19 at Cornell University" Department of Industrial Engineering, Sharif University, July 2021

"Reopening Cornell During the COVID-19 Pandemic" Department of Statistics, Purdue University, October 2020

"Reopening Cornell During the COVID-19 Pandemic" Department of Systems and Industrial Engineering, University of Arizona, November 2020

"Reopening Cornell During the COVID-19 Pandemic" Data for Good Seminar Series, Data Science Institute, Columbia University, September 2020

"Fighting COVID-19 at Cornell" Systems Engineering Seminar, Cornell University, September 2020

"Matching Queues, Flexibility and Incentives" Emerging Mobility Systems and Services Seminar University of Michigan, August 2020

"Matching Queues, Flexibility and Incentives" Operations, Information & Technology Department Seminar, Graduate School of Business, Stanford University, Palo Alto CA, March 2020

"Grey-Box Bayesian Optimization" Industrial and Systems Engineering Department, Georgia Tech, Atlanta GA, November 2019

"Grey-Box Bayesian Optimization" School of Computing, Informatics & Decision Systems Engineering, Arizona State University, Tempe AZ, November 2019.

"Grey-Box Bayesian Optimization" Industrial Engineering and Operations Research Department, University of California, Berkeley CA, Sepetember 2019.

"Bayesian Optimization for Materials Design and Drug Discovery" Science at the Edge, Interdisciplinary Physics Seminar Series, Michigan State University, East Lansing MI, October 2018

"Bayesian Optimization in the Tech Sector" Department of Industrial and Operations Engineering, University of Michigan, Ann Arbor MI, September 2018

"Bayesian Optimization in the Tech Sector" Management Sciences Guest Lecturer Seminar Series, University of Iowa, Iowa City IA, September 2018

"Bayesian Optimization in the Tech Sector" School of Industrial Engineering and Management Seminar Series, Oklahoma State University, Stillwater OK, August 2018

"Bayesian Optimization for Problems with Exotic Structure" Cornell Center of Applied Mathematics Colloquium, March 2018

"Bayesian Optimization with Gradients" (presented with A.G. Wilson) Cornell AI Seminar, November 2017.

"Providing Reliable Transportation at Uber" Heinz College, Carnegie Mellon University, Pittsburgh PA, November 2017

"Bayesian Optimization in the Tech Sector: The Parallel Knowledge Gradient Method, and Experiences at Uber, Yelp, and SigOpt" Econometrics and Statistics Workshop, Booth School of Business, University of Chicago, Chicago IL, May 2016

"Bayesian Optimization in the Tech Sector: The Parallel Knowledge Gradient Method, and Experiences at Uber, Yelp, and SigOpt" (departmental seminar); "Coding for Researchers" (informal talk for graduate students and faculty). Department of Industrial Engineering and Management Sciences, Northwestern University, Evanston IL, May 2016.

"Parallel Bayesian Optimization, for Metrics Optimization at Yelp" The Fariborz Maseeh Department of Mathematics and Statistics, Portland State University, Portland OR, April 2016.

"Parallel Bayesian Optimization, for Metrics Optimization at Yelp" IEOR-DRO Seminar, Department of Industrial Engineering and Operations Research, Columbia University, New York NY, April 2016.

"Parallel Bayesian Optimization, for Metrics Optimization at Yelp" Industrial Engineering and Operations Research Department, University of California, Berkeley CA, March 2016.

"Parallel Bayesian Optimization, for Metrics Optimization at Yelp" Operations Research Center, Massachussettes Institute of Technology, Cambridge MA, February 2016.

"Parallel Bayesian Optimization, for Metrics Optimization at Yelp" Sauder School of Business, University of British Columbia, Vancouver BC, January 2016.

"Parallel Bayesian Global Optimization of Expensive Functions, for Metrics Optimization at Yelp" Optimization Seminar, Department of Operations Research and Financial Engineering, Princeton University, Princeton NJ, November 2015.

"Optimal Learning for Molecular Discovery" Sante Fe Institute, Sante Fe NM, April 2015.

"Parallel Bayesian Global Optimization of Expensive Functions, for Metrics Optimization at Yelp" Google Distinguished Lecture Series, Carnegie Mellon University Machine Learning Department, Pittsburgh PA, February 2015.

"Parallel Bayesian Global Optimization of Expensive Functions, for Metrics Optimization at Yelp" Operations Research and Industrial Engineering, University of Texas, Austin TX, February 2015.

"Parallel Bayesian Global Optimization of Expensive Functions, for Metrics Optimization at Yelp" Operations Research Center, Massachusetts Institute of Technology, Boston MA, October 2014.

"Optimal Learning for Molecular Discovery" Cornell Center for Applied Math Colloquium, October 2014.

"Parallel Bayesian Global Optimization of Expensive Functions, for Metrics Optimization at Yelp" Operations Research Department, Naval Postgraduate School, Monterey CA, September 2014.

"Parallel Bayesian Global Optimization of Expensive Functions, for Metrics Optimization at Yelp" Cornell AI Seminar, September 2014.

"Bayesian Methods for Simulation Optimization" Department of Industrial Engineering, Tsinghua University, Beijing, June 2014.

"Information Filtering for arXiv.org: Bandits, Exploration vs. Exploitation, and the Cold Start Problem" Department of Industrial and Systems Engineering, Georgia Institute of Technology, Atlanta GA, April 2014.

"Optimal Learning for Discovering Minimal Peptide Substrates." Mirkin Research Group, Department of Chemistry, Northwestern University, Evanston IL, February 2014.

"Bayesian Methods for Simulation Optimization." Center for Information Science and Systems Engineering (CISE), Boston University, November 2013.

"Bayesian Methods for Simulation Optimization." Virginia Commonwealth University, Department of Statistical Sciences and Operations Research, January 2013.

"Bayesian Methods for Simulation Optimization." University of Virginia, Department of Systems and Information Engineering, November 2012.

"Optimal Learning: an Overview." The Ohio State University, Department of Psychology, Myung/Pitt Research Group, October 2012.

"Bayesian Methods for Simulation Optimization." Rensselaer Polytechnic Institute, Department of Industrial and Systems Engineering, March 2012.

"A New Solution to a Classic Problem: Ranking & Selection with Tight Lower Bounds on Probability of Correct Selection" Cornell Center for Applied Mathematics Colloquium, February 2011.

"Bayesian Methods for Simulation Optimization" Northwestern University, Department of Industrial Engineering and Management Sciences, October 2010.

"Bayesian Methods for Simulation Optimization" Cornell University, Scientific Computing and Numerics Seminar, October 2010

"Correlated Knowledge Gradients for Ranking and Selection of Many Alternatives." Johns Hopkins University, Department of Applied Mathematics and Statistics, February 2010.

"Correlated Knowledge Gradients for Ranking and Selection of Many Alternatives" Cornell University, Operations Research and Information Engineering Colloquium, September 2009.

"Bayesian Ranking and Selection of Many Alternatives with Correlated Knowledge Gradients" London School of Economics, Statistics Department, May 2009.

"Knowledge-Gradient Methods for Efficient Information Collection" Northwestern University, Kellogg School of Management, February 2009.

"Knowledge-Gradient Methods for Efficient Information Collection" University of Florida, Department of Industrial and Systems Engineering, February 2009.

"Knowledge-Gradient Methods for Efficient Information Collection" University of California (Berkeley), Departement of Statistics, February 2009.

"Knowledge-Gradient Methods for Efficient Information Collection" Cornell University, School of Operations Research and Information Engineering, February 2009.

"Knowledge-Gradient Methods for Efficient Information Collection" University of Texas at Austin, Mc-

Combs School of Business, Jan 2009.

"Knowledge-Gradient Methods for Efficient Information Collection" Stanford University, Department of Management Science and Engineering, Jan 2009.

"Knowledge-Gradient Methods for Efficient Information Collection" University of Pittsburgh, Department of Industrial Engineering , Jan 2009.

"Knowledge-Gradient Methods for Efficient Information Collection" Duke University, Fuqua School of Business, Decision Sciences, Jan 2009.

Conference Presentations

"Fighting the Pandemic with Data: A Case Study at Cornell University", 2021 US Frontiers of Engineering Symposium, National Academy of Engineering, Boulder CO, September 2021

"Fighting COVID-19 at Cornell: Adaptive Testing, Asymptomatic Screening & Math Modeling" 2021 Contact Tracing Summit, Boston University, July 2021

"Grey-box Bayesian Optimization" INFORMS Simulation Society Workshop, Pennsylvania State University, June 2021

"Fighting COVID-19 with Simulation", IISE Annual Conference, May 2021

"Reopening Cornell During the COVID-19 Pandemic" COVID-19 Summit, Cornell University, Nov 2020

"Reopening Cornell During the COVID-19 Pandemic" INFORMS Annual Meeting, virtual, Oct 2020

P.I. Frazier "Bayesian Optimization for Accelerating Biomaterials Discovery" Limpid/IDEAS Joint Workshop, UCSB, Santa Barbara CA, Feb 2020

P.I. Frazier, "Bayesian Optimization for Materials Design", High Entropy Alloys Workshop, Arlington VA, Nov 2019.

P.I. Frazier, "A Tutorial on Partially Observable Markov Decision Processes (POMDPs)", AFOSR Grant Review Meeting, Georgia Tech, Atlanta GA, Nov 2019

P.I. Frazier, "Accelerating Scientific Discovery through Interpretable Machine Learning and Intelligent Experimentation" Interpretable Learning in Physical Sciences Workshop, Institute for Pure and Applied Mathematics, UCLA, Los Angeles CA, Oct 2019.

P.I. Frazier, "Industry-related Career Paths in OR" 2019 INFORMS Doctoral Student Colloquium, INFORMS Annual Meeting, Seattle WA, Oct 2019

P.I. Frazier, "Working with Industry" 2019 INFORMS Doctoral Student Colloquium, INFORMS Annual Meeting, Seattle WA, Oct 2019

L. Tallorin et al., "Bayesian Optimization for Peptide Design", INFORMS Annual Meeting, Seattle WA, Oct 2019

P.I. Frazier "Grey-box Bayesian Optimization" AFOSR Optimization and Discrete Mathematics Program Review, Arlington VA, Aug 2019.

W. Hu, P.I. Frazier, X. Zhang "An Asymptotically Optimal Index Policy For The Finite Horizon Restless Bandit" INFORMS Applied Probability Society Conference, Brisbane Australia, July 2019.

W. Hu, P.I. Frazier "An Asymptotically Optimal Index Policy For The Finite Horizon Restless Bandit" INFORMS Computing Society Conference, University of Tennessee, Knoxville TN, Jan 2019.

S. Toscano-Palmerin, P.I. Frazier "Bayesian Optimization With Expensive Integrands" INFORMS Computing Society Conference, University of Tennessee, Knoxville TN, Jan 2019.

A. Lu, P.I. Frazier, O. Kislev "Signaling with Surge Pricing: Evidence from a Natural Experiment at Uber" Societal Networks Workshop, Simons Institute, Berkeley CA, March 2018.

P.I. Frazier "Bayesian Optimization with Exotic Structure" SIAM Conference on Discrete Mathematics, Denver CO, May 2018.

P.I. Frazier, "Bayesian Optimization for Problems with Exotic Structure" Data and Decisions 2018, University of Arizona, Tucson AZ, November 2018

P.R. Messinger, M.J. Bitner, P.I. Frazier, A. Megahed, X. Wang, "Machine Learning Meets Service Dominant Logic" (Panel discussion) 2018 Conference on Service Science (CSS2018), Phoenix AZ, November 2018

P.I. Frazier, "Driver Preferences at Uber: Welfare, Flexibility, and Pricing" INFORMS Annual Meeting, Phoenix AZ, November 2018

B. Chen, P.I. Frazier, D. Kempe, "Incentivizing Exploration by Heterogeneous Users" INFORMS Annual Meeting, Phoenix AZ, November 2018

P. Frazier. "Bayesian Optimization" (INFORMS Tutorial) INFORMS Annual Meeting, Phoenix AZ, November 2018

W. Hu, P. Frazier, "An Asymptotically Optimal Index Policy for the Finite Horizon Restless Bandit" INFORMS Annual Meeting, Phoenix AZ, November 2018

P.I. Frazier "Knowledge-Gradient Methods for Bayesian Optimization" NIPS Workshop on Bayesian Optimization (BayesOpt 2017), Los Angeles CA, December 2017.

J. Wu, M.U. Poloczek, A.G. Wilson, P.I. Frazier, "Bayesian Optimization with Gradients" Neural Information Processing Systems Conference, Los Angeles CA, December 2017. (NIPS oral presentation)

M.U. Poloczek, J. Wang, P.I. Frazier, "Multi-Information Source Optimization" Neural Information Processing Systems Conference, Los Angeles CA, December 2017.

P.I. Frazier "Economic Impacts of Ride-Hailing with Self-Driving Cars" Smart Cities in A Connected World, Center for Technology Licensing Partnership Forum, Cornell University, November 2017.

P.I. Frazier, "Estimating Willingness to Carpool at Uber." INFORMS Annual Meeting, Houston TX, October 2017.

P.I. Frazier "Simulation and Direct Experimentation in the Tech Sector" 2017 INFORMS Simulation Society Workshop, Durham UK, August 2017.

J. Wu, M.U. Poloczek, A.G. Wilson, P.I. Frazier, "Bayesian Optimization with Gradients" Applied Probability Society Conference, Evanston IL, July 2017

P.I. Frazier, "Using Simulation to Improve Statistical Power in Switchback Experiments at Uber." Applied Probability Society Conference, Evanston IL, July 2017

J. Wu, M.U. Poloczek, A.G. Wilson, P.I. Frazier, "Bayesian Optimization with Gradients" AFOSR MURI Review, MIT, Cambridge MA, April 2017.

J. Wu, M.U. Poloczek, A.G. Wilson, P.I. Frazier, "Bayesian Optimization with Gradients" SIAM Computational Science and Engineering Conference, Atlanta GA, March 2017

P.I. Frazier, "Optimal Learning for Peptide Design." AFOSR Natural Materials and Systems Program Review, Destin FL, December 2016.

P.I. Frazier, "Using Simulation to Improve Statistical Power in Switchback Experiments at Uber." INFORMS Annual Meeting, Nashville TN, November 2016.

K. Willcox, D. Allaire, P.I. Frazier, J. Martins, Y. Marzouk, M. Mignolet, D. Wolpert, "MURI: Managing Multiple Information Sources of Multi-Physics Systems" AFOSR Computational Mathematics Program Review, Arlington VA, August 2016.

P.I. Frazier, "Optimal Learning for Scientific Discovery." AFOSR Discrete Mathematics and Optimization Program Review, Arlington VA, December 2015.

P.I. Frazier, "Optimal Learning for Peptide Design." AFOSR Natural Materials and Systems Program Review, Destin FL, December 2015.

J. Wang, S.C. Clark, E. Liu, and P.I. Frazier, "Parallel Bayesian Global Optimization of Expensive Functions, for Metrics Optimization at Yelp." INFORMS Simulation Society Workshop, Purdue University, West Lafayette IN, July 2015.

P. Rajan, W. Han, R. Sznitman, P.I. Frazier, B. Jedynak, "Bayesian Multiple Target Localization" International Conference on Machine Learning (ICML), Lille France, July 2015.

P.I. Frazier, W. Hu, "Parallel Bayesian Policies for Multiple Comparisons with a Known Standard" 2015 CORS/INFORMS International Conference, Montreal, June 2015.

P.I. Frazier, "Thoughts on Informatics in Materials Science" Information-Driven Approach to Materials Discovery and Design, LDRD-DR Review, Los Alamos National Lab, NM, April 2015.

P.I. Frazier, J. Xie, S. Sankaran, A. Marsden, A. Ramachandra, and S. Elmohamed, "Bayesian Global Optimization of Expensive Functions: Exploiting Noise with Low-Dimensional Structure" SIAM Conference on Computational Science and Engineering, Salt Lake City, UT, March 2015.

P. I. Frazier, J. Wang, P. Yang, M. D. Burkart, N. Gianneschi, M. K. Gilson, N. Kosa, and L. Tallorin "Optimal Learning for Scientific Discovery" INFORMS Computing Society Conference, Richmond, VA, January 2015.

P.I. Frazier, X. Zhao, "Information Filtering for arXiv.org: Bandits, Exploration vs. Exploitation, and the Cold Start Problem" INFORMS Computing Society Conference, Richmond, VA, January 2015.

P.I. Frazier, "Optimal Learning for Amino and Nucleic Acid Sequence Design" Air Force Office of Scientific Research Program Review, Natural Materials, Systems and Extremophiles, Fort Walton Beach, FL, December 2014.

P.I. Frazier, J. Xie, S. Sankaran, A. Marsden, A. Ramachandra, and S. Elmohamed, "Bayesian Global Optimization of Expensive Functions with Low-dimensional Noise" INFORMS Annual Meeting, San Francisco, CA, November 2014.

P.I. Frazier, X. Zhao, "Information Filtering for arXiv.org: Bandits, Exploration vs. Exploitation, and the Cold Start Problem" Fusion Fest, Rutgers University, October 2014.

J. Xie, S. Sankaran, S. Elmohamed, A. Marsden, P.I. Frazier, "Bayesian global optimization of expensive functions: exploiting noise with low-dimensional structure" MOPTA, Lehigh University, August 2014

P.I. Frazier, X. Zhao, "Information Filtering for arXiv.org: Bandits, Exploration vs. Exploitation, and the Cold Start Problem" Mostly OM, Beijing, June 2014.

P.I. Frazier, J. Wang, P. Yang, "Optimal Learning for Discovering Minimal Peptide Substrates." Information Science for Materials Discovery and Design Workshop, Sante Fe, NM, February 2014.

P.I. Frazier, R. Waeber, S.G. Henderson, "Bayes-Optimal Methods for Optimization via Simulation: The Probabilistic Bisection Algorithm." STOR-i Workshop, Lancaster University, Lancaster UK, January 2014.

P.I. Frazier "Optimal Learning for Peptide Design." Air Force Office of Scientific Research, Natural Materials, Systems and Extremophiles Program Review, Eglin Air Force Base, Fort Walton Beach, FL, December 2013.

P.I. Frazier, "A Fully Sequential Elimination Procedure for Indifference-Zone Ranking and Selection with Tight Bounds on Probability of Correct Selection." INFORMS Annual Meeting, JFIG Prize Presentation, Minneapolis MN, October 2013.

P.I. Frazier "Ranking and Selection with Tight Bounds on Probability of Correct Selection." INFORMS Annual Meeting, Minneapolis MN, October 2013.

P.I. Frazier "Bayesian Active Learning for Finding Maximally-valued Exemplars." INFORMS Annual Meeting, Minneapolis MN, October 2013.

P.I. Frazier "Ranking and Selection with Tight Bounds on Probability of Correct Selection." Applied Probability Society Conference, San Jose, Costa Rica, July 2013.

P.I. Frazier, S. Zhang, P. Hanagal, A.J. Meltzer, D.B. Schneider, "Optimal Patient-specific Post-operative Surveillance for Vascular Surgeries." INFORMS Healthcare Conference, Chicago, IL, June 2013.

P.I. Frazier "Optimal Learning: Bayesian Methods for Simulation Optimization." AFOSR Program Review for Optimization & Discrete Mathematics, Arlington, VA, April 2013.

P.I. Frazier "Optimal Learning in Materials Science." Materials Informatics Workshop, Sante Fe, NM, April 2013.

P.I. Frazier "Ranking and Selection with Tight Bounds on Probability of Correct Selection." Simulation Optimization Workshop, Viña del Mar, Chile, March 2013.

P.I. Frazier, W.B. Powell and H.P. Simão "Simulation Calibration with Correlated Knowledge Gradients." SIAM Conference on Computational Science & Engineering, Bostan, MA, February 2013.

W.B. Powell and P.I. Frazier "Optimal Learning for Efficient Sequential Experimental Design in Nano-Bio Research." Air Force Office of Scientific Research, Natural Materials, Systems and Extremophiles Program Review, Washington, D.C., January 2013.

P.I. Frazier "Ranking and Selection with Tight Bounds on Probability of Correct Selection." INFORMS Computing Society Conference, Sante Fe, NM, January 2013.

P.I. Frazier and J. Xie "Bayes-optimal Policies for Multiple Comparisons with a Known Standard." INFORMS Computing Society Conference, Sante Fe, NM, January 2013.

P.I. Frazier, L. Chen and B. Jedynak, "Sequential Screening: A Bayesian Dynamic Programming Analysis." Winter Simulation Conference, Berlin, December 2012.

P.I. Frazier, L. Chen and B. Jedynak, "Sequential Screening: A Bayesian Dynamic Programming Analysis." INFORMS Annual Meeting, Phoenix, AZ, October 2012.

P.I. Frazier and S.C. Clark, "Parallel Global Optimization using an Improved Multi-points Expected Improvement Criterion." INFORMS Annual Meeting, Phoenix, AZ, October 2012.

P.I. Frazier and S.C. Clark, "Parallel Global Optimization with Expensive Function Evaluations: A One-Step Bayes-Optimal Method." MOPTA, Lehigh University, Bethlehem, PA, August 2012.

P.I. Frazier and S.C. Clark, "Parallel Global Optimization Using An Improved Multi-points Expected Improvement Criterion." Uncertainty in Computer Models 2012 Conference, Sheffield, UK, July 2012. (contributed poster)

J. Xie, P.I. Frazier, and S.E. Chick, "Value of Information Methods for Pairwise Sampling with Correlations." Uncertainty in Computer Models 2012 Conference, Sheffield, UK, July 2012. (contributed poster)

P.I. Frazier and S.C. Clark, "Parallel Global Optimization Using Multi-points Expected Improvement and Stochastic Approximation." 2012 CORS/MOPGP International Joint Conference, Niagra Falls, ON, June 2012.

P.I. Frazier and J. Xie, "Bayes-optimal Policies for Multiple Comparisons with a Known Standard." INFORMS Computing Society Conference, Sante Fe, NM, January 2013.

P.I. Frazier "Ranking and Selection with Tight Bounds on Probability of Correct Selection." INFORMS Computing Society Conference, Sante Fe, NM, January 2013.

P.I. Frazier, L. Chen and B. Jedynak, "Sequential Screening: A Bayesian Dynamic Programming Analysis." INFORMS Annual Meeting, Phoenix, AZ, October 2012.

P.I. Frazier and S.C. Clark, "Parallel Global Optimization using an Improved Multi-points Expected Improvement Criterion." INFORMS Annual Meeting, Phoenix, AZ, October 2012.

P.I. Frazier and S.C. Clark, "Parallel Global Optimization with Expensive Function Evaluations: A One-Step Bayes-Optimal Method." MOPTA, Lehigh University, Bethlehem, PA, August 2012.

P.I. Frazier and S.C. Clark, "Parallel Global Optimization Using An Improved Multi-points Expected Improvement Criterion." Uncertainty in Computer Models 2012 Conference, Sheffield, UK, July 2012. (contributed poster)

J. Xie, P.I. Frazier, and S.E. Chick, "Value of Information Methods for Pairwise Sampling with Correlations." Uncertainty in Computer Models 2012 Conference, Sheffield, UK, July 2012. (contributed poster)

P.I. Frazier and S.C. Clark, "Parallel Global Optimization Using Multi-points Expected Improvement and Stochastic Approximation." 2012 CORS/MOPGP International Joint Conference, Niagra Falls, ON, June

2012.

P.I. Frazier, S.C. Clark, J. Xie, R. Waeber, and S.G. Henderson, "New One-Step Bayes-Optimal Algorithms for Global Optimization: Parallel Computing and Common Random Numbers." Air Force Office of Scientific Research Grantees Meeting, Arlington, VA, April 2012.

S.C. Clark and P.I. Frazier, "Parallel Global Optimization Using An Improved Multi-points Expected Improvement Criterion." INFORMS Optimization Society Conference, Miami, February 2012.

P.I. Frazier and A.M. Kazachkov, "Guessing Preferences: A New Approach to Multi-Attribute Ranking and Selection." Winter Simulation Conference, Phoenix, December 2011.

P.I. Frazier, "Tutorial: Bayesian Methods for Global and Simulation Optimization." INFORMS Annual Meeting, Charlotte, November 2011 (invited INFORMS tutorial)

P.I. Frazier, "Indifference-Zone Ranking and Selection with 10,000 or More Alternatives." INFORMS Annual Meeting, Charlotte, November 2011

J. Xie, P.I. Frazier, "Sequential Bayes-optimal Policies for Multiple Comparisons with a Control." INFORMS Annual Meeting, Charlotte, November 2011

P.I. Frazier, "Indifference-Zone Ranking and Selection with 10,000 or More Alternatives." INFORMS Simulation Society Workshop, Montreal, July 2011. (contributed poster)

P.I. Frazier, "Sequential Ranking and Selection: Tight Bounds and Large-Scale Problems." INFORMS Applied Probability Society Conference, Stockholm, July 2011

P.I. Frazier, Z. Owen, R.C. Bicalho, T.M.A. Santos, A.G.V. Teixera "Optimal Sequential Experimental Design for Stochastic Root-finding in Drug Development." INFORMS Healthcare Conference, Montreal, June 2011

P.I. Frazier "Bayes-Optimal Methods for Simulation Optimization." Air Force Office of Scientific Research Grantees Meeting, Arlington, VA, April 2011

P.I. Frazier "A Minimally Conservative Indifference Zone Policy" INFORMS Annual Meeting, Austin, November 2010

S.E. Chick, P.I. Frazier "Sequential Sampling for Selection: The Undiscounted Case" INFORMS Annual Meeting, Austin, November 2010

P.I. Frazier, G.G. Gutierrez, S.G. Henderson "Noise-Tolerant Bayesian Bisection" INFORMS Annual Meeting, Austin, November 2010

I.O. Ryzhov, P.I. Frazier and W.B. Powell "On the robustness of a one-period look-ahead policy in multi-armed bandit problems," International Workshop on Computational Stochastics, June 2010

S.E. Chick and P.I. Frazier, "The Conjunction of the Knowledge Gradient and the Economic Approach to Simulation Selection." Winter Simulation Conference, Austin, December 2009

P.I. Frazier, W.B. Powell, H.P. Simão "Simulation Calibration with Correlated Knowledge-Gradients" INFORMS Annual Meeting, San Diego, October, 2009.

P.I. Frazier, W.B. Powell "Structural Properties of the Value of Information in Single-Stage Ranking and Selection" INFORMS Annual Meeting, San Diego, October, 2009.

P.I. Frazier, W.B. Powell "Bayesian Sequential Sampling Policies and Sufficient Conditions for Convergence to a Global Optimum" Applied Probability Society Conference, Ithaca, June 2009.

P.I. Frazier, W.B. Powell "Bayesian Sequential Sampling Policies and Sufficient Conditions for Convergence to a Global Optimum" CORS, Toronto, June 2009.

D. Negoescu, P.I. Frazier, W.B. Powell "Knowledge Gradient Methods in Drug Discovery for Ewing's Sarcoma" Lombardi Comprehensive Cancer Center, April 2009. (contributed poster)

P.I. Frazier, W.B. Powell "Ranking and Selecton of Many Alternatives using Knowledge Gradients and Correlated Bayesian Beliefs" Seminar on sampling-based optimization in the presence of uncertainty, Schloss Dagstuhl, Wadern, Germany, April 2009.

P.I. Frazier and W.B. Powell "The Knowledge-Gradient Stopping Rule for Ranking and Selection," Winter Simulation Conference, Miami, December, 2008. (contributed paper)

P.I. Frazier and W.B. Powell "Convergence of Sequential Sampling Policies for Bayesian Information Collection Problems", INFORMS Annual Meeting, Washington D.C., October, 2008.

P.I. Frazier, W.B. Powell and S. Dayanik. "The Knowledge-gradient Policy for Ranking and Selection with Correlated Normal Beliefs" INFORMS Annual Meeting, Washington D.C., October, 2008.

P.I. Frazier and A.J. Yu "Sequential Hypothesis Testing under Stochastic Deadlines," Neural Information Processing Systems, Vancouver, December, 2007. (contributed paper, spotlight paper presentation)

P.I. Frazier, W.B. Powell and S. Dayanik, "A Knowledge Gradient Policy for Sequential Information Collection," International Workshop on Sequential Methodologies, Auburn University, July, 2007.

P.I. Frazier, W.B. Powell and S. Dayanik, "Sequential Off-line Learning with Knowledge Gradients" IEEE Symposium on Approximate Dynamic Programming and Reinforcement Learning, Honolulu, April 2007. (contributed paper)

Other Presentations

"Fighting COVID-19 at Cornell", Cornell Operations Research and Information Engineering Alumni Event, Cornell University, February 2021

"Reopening Cornell During the COVID-19 Pandemic" Cornell Club of Arizona, November 2020

"Reopening Cornell During the COVID-19 Pandemic", Guest lecture in Data Science for COVID-19, University of North Carolina, November 2020

"Cornell COVID-19 Modeling", Guest lecture in VETMI6111 Principles of Infectious Disease for Public Health, College of Veterinary Medicine, Cornell University, December 2020

"Reopening Cornell During the COVID-19 Pandemic", Guest lecture in Data Science for COVID-19, University of North Carolina, November 2020

"COVID-19 Mathematical Modeling at Cornell", ORACL Workshop, Cornell University, June 2020

"Stochastic Optimization at Uber" ORF 411 Guest Lecture, Princeton University, Princeton NJ, November 2015.

"Cornell ORIE: Engaged with the Private Sector," Cornell Club, New York City, May 2015.

"Using Machine Learning to Optimize Expensive Functions, with Application to Metrics Optimization at Yelp," `http://new.livestream.com/CornellEngineering/events/3587902/videos/69344673`, Cornell College of Engineering Webinar, November 2014.

"Getting Research Grants" INFORMS Annual Meeting, San Francisco, CA, November 2014.

Patents

"System and method to detect service assignment outcomes in connection with arranged services," D Stayner, JM Nickels, P Frazier, T Lim, M Gulati, Y Jiang. (applicant Uber, Inc.) US Patent Application 16/142985. Filed 2018.

"Decoupled logical and physical data storage within a database management system," P Frazier, P Andersen, G Boggs, C Carrillo, D Holtzman, JM Morris, PK Muller, P Rubio. (assigned to Teradata, Inc.) US Patent 7,730,171. 2010

"Balanced allocation of multiple resources, or of multiple resources from multiple providers," P Frazier, P Andersen, G Boggs, C Carrillo, D Holtzman, JM Morris, PK Muller, R Yellin. (assigned to Teradata, Inc.) US Patent 7,562,195. 2009

"Exponential smoothing of aperiodically measured values with staleness reporting," P Frazier (assigned

to Teradata, Inc.) US Patent 7,395,164. 2008

"The knowledge gradient algorithm with correlated beliefs for efficient information collection for a finite number of alternatives," P Frazier, W Powell (assigned to Princeton University) US Patent App. 61154834. 2009

"Method of identifying a failing storage device based on common factor object inconsistency," JM Morris, P Andersen, G Boggs, C Carrillo, J Catozzi, P Frazier (assigned to Teradata, Inc.) US Patent App. 11/530,144. 2006

"Method of allocating storage devices from storage devices within a computer system," P Frazier, DH Holtzman, JM Morris (assigned to Teradata, Inc.) US Patent App. 11/669,355. 2007

Press Coverage

"Prestigious US University Dares to Not Go Online: How to Fight the Epidemic", (in Japanese) The Asahi Shimbun (daily circulation 6.5M people), Yu Miyaji, January 23, 2021 [Link]

"Taking On COVID-19 at Cornell University", Center for Social & Behavioral Science, University of Illinois Urbana-Champaign, [Link], February 2021

"Cornell University gives exclusive look at how it has contained COVID-19" Kaitlyn Folmer, Good Morning America, September 22, 2020 [Link]

"Should your university reopen in the fall? Let mathematical modeling guide the way" Ashley Kilgore, INFORMS Resoundingly Human Podcast, July 10, 2020 [Link]

"More Infections From an Online Semester?" Lilah Burke, Inside Higher Ed, July 1, 2020 [Link]

"What Happens if Someone Throws a Party? Questions and Answers on the Model Reopening Campus", Anil Oza, The Cornell Daily Sun, July 2, 2020 [Link]

"Why Cornell Will Reopen in the Fall", Michael I. Kotlikoff and Martha E. Pollack, Wall Street Journal, June 30, 2020 [Link]

Chris Woolston, "Big Red data: crunching numbers to fight COVID-19 and more", Cornell Chronicle, June 17, 2020 [Link]

Laurence Kotlikoff, "Ending Covid-19 In A Month Requires Just One Thing — Presidential Leadership", Forbes, Jun 14, 2020 [Link]

Melanie Lefkowitz, "Group testing could screen entire US, research suggests", Cornell Chronicle, June 11, 2020 [Link]

Dr. Mark Abdelmalek, "With all eyes on coronavirus testing, some researchers say 'group testing' could make up the shortage" ABC News, May 13, 2020 [Link]

Laurence Kotlikoff, "Drs. Fauci & Birx: Here's A Way To Contain Covid-19 And Reopen The Economy In As Little As One Month", Forbes, May 3, 2020 [Link]