Contact Information

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Employment History

Sep 2022-Present **California Institute of Technology**, *Pasadena, CA.*
Postdoctoral Scholar
- Supervisor: Yisong Yue

Oct 2020-Mar 2021 **Facebook**, *Menlo Park, CA.*
Visiting Researcher
- Developed novel adaptive experimentation algorithms and deployed them within Facebook's internal experimentation pipeline
- Supervisor: Eytan Bakshy

Jun-Sep 2020 **Facebook**, *Menlo Park, CA.*
Research Intern
- Developed novel Bayesian optimization algorithms for problems with unknown evaluation costs
- Mentor: Daniel R. Jiang

Jun-Aug 2019
Jun-Aug 2018 **ExxonMobil Upstream Research Company**, *Houston, TX.*
Research Intern
- Developed novel Bayesian optimization algorithms for reservoir development planning under geological uncertainty
- Mentors: Liz Curry, Damian Burch, and Xiao-Hui Wu

Education

Jul 2016-Aug 2022 **Cornell University**, *USA.*
Ph.D. in Operations Research and Information Engineering
- Advisor: Peter Frazier
- Minors: Computer Science and Statistics

Aug 2011-Jun 2016 **University of Guanajuato & Center for Research in Mathematics**, *Mexico.*
B.Sc. in Mathematics. GPA: 9.7/10
- Highest GPA of the 2011-2016 class

Research Interests

Bayesian Optimization, Preference Elicitation, Simulation Optimization, Adaptive Experimentation, Optimal Learning

Publications and Preprints

1. V. Mishra, R. Astudillo, P. Frazier, and F. Zhang, "A probably-convergent algorithm for source seeking under multiple sources", *Preprint.*
2. R. Astudillo, Z. Lin, E. Bakshy, and P. Frazier, "qEUBO: A decision-theoretic acquisition function for preferential Bayesian optimization", *Preprint.*

3. B. Sha, R. Astudillo, and P. Frazier, "Mixed integer linear programming under preference uncertainty " (Finalist at the 2020 INFORMS Undergraduate Operations Research Prize Competition), *Preprint*.
4. Z. Cosenza, R. Astudillo, P. Frazier, and D. Block "Multi-information source Bayesian optimization of culture media for cellular agriculture" (Spotlight presentation at the ICML 2022 Adaptive Experimental Design and Active Learning in the Real World Workshop, 7%), *Biotechnology and Bioengineering, 2022*.
5. Z. Lin, R. Astudillo, P. Frazier, and E. Bakshy, "Preference exploration for efficient Bayesian optimization with multiple outcomes", *International Conference on Artificial Intelligence and Statistics, 2022*.
6. R. Astudillo, and P. Frazier, "Thinking inside the box: A tutorial on grey-box Bayesian optimization", *Advanced Tutorial at the Winter Simulation Conference, 2021*.
7. R. Astudillo, D.R. Jiang, M. Balandat, E. Bakshy, and P. Frazier, "Multi-step budgeted Bayesian optimization with unknown evaluation costs", *Advances in Neural Information Processing Systems, 2021*.
8. R. Astudillo and P. Frazier, "Bayesian optimization of function networks", *Advances in Neural Information Processing Systems, 2021*.
9. S. Cakmak, R. Astudillo, P. Frazier and E. Zhou, "Bayesian optimization of risk measures", *Advances in Neural Information Processing Systems, 2020*.
10. R. Astudillo and P. Frazier, "Multi-attribute Bayesian optimization with interactive preference learning", *International Conference on Artificial Intelligence and Statistics, 2020*.
11. R. Astudillo and P. Frazier, "Bayesian optimization of composite functions", *International Conference on Machine Learning, 2019*.
12. R. Astudillo and P. Frazier, "Multi-attribute Bayesian optimization under utility uncertainty", *NIPS Workshop on Bayesian Optimization, 2017*.

Selected Presentations

Dec 2021 "Thinking inside the box: A tutorial on grey-box Bayesian optimization", *Advanced Tutorial at the Winter Simulation Conference, Phoenix, AZ*.

Dec 2021 "Multi-step budgeted Bayesian optimization with unknown evaluation costs", *NeurIPS 2021, Virtual*.

Oct 2021 "Grey-box Bayesian optimization", *Young Researchers Workshop, Cornell University's School of ORIE, Ithaca, NY*.

Mar 2021 "Bayesian optimization of function networks", *SIAM Conference on Computational Science and Engineering, Virtual*.

Feb 2020 "Interactive Bayesian optimization with uncertain preferences", *Facebook Adaptive Experimentation Workshop, New York City, NY*.

Jul 2019 "Bayesian optimization of composite functions with application to computationally expensive inverse problems", *Applied Inverse Problems Conference, Grenoble, France*.

Jun 2019 "Bayesian optimization of composite functions", *International Conference on Machine Learning, Long Beach, CA*.

May 2019 "Bayesian optimization of composite functions", *2nd Uber Science Symposium, San Francisco, CA*.

Selected Graduate Coursework

- Applied Stochastic Processes
- Mathematical Programming
- Bayesian Statistics and Data Analysis
- Numerical Methods for Data Science
- Bayesian Machine Learning
- Statistical Learning Theory
- Advanced Machine Learning
- Optimal Learning

Teaching Experience

Cornell University, *USA.*
Instructor

Summer 2021	Engineering Stochastic Processes	Undergraduate

Cornell University, *USA.*
Teaching Assistant

Fall 2018	Statistical Principles	Graduate
Spring 2017	Engineering Stochastic Processes	Undergraduate
Fall 2016	Basic Probability and Statistics	Undergraduate

Center for Research in Mathematics (CIMAT), *Mexico.*
Teaching Assistant

Fall 2015	Measure Theory and Probability	Graduate

University of Guanajuato, *Mexico.*
Teaching Assistant

Spring 2015	Complex Analysis	Undergraduate
Fall 2014	Elementary Number Theory	Undergraduate

Selected Awards

2021	NeurIPS 2021 Outstanding Reviewer Award (8%)
2015	Second Prize - XXII International Mathematics Competition for University Students
2014	*Orgullo UG* Academic Excellence Award - University of Guanajuato
2012-2016	Academic Excellence Fellowship - Center for Research in Mathematics

Academic Service

Conference Reviewing: AISTATS, ICLR, ICML, NeurIPS
Journal Reviewing: Artificial Intelligence, Neural Computation, Operations Research

Languages

English (proficient), Spanish (native)