Raul Astudillo

Curriculum Vitae

Contact and citizenship information

Full name: Raul Astudillo Marban

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Citizenship: Mexico

Education

2016-Present **Cornell University**, *USA*.
Ph.D. in Operations Research and Information Engineering
- Expected graduation date: December 2021
- Advisor: Peter I. Frazier
- Minors: Computer Science and Statistics

2011-2016 **University of Guanajuato**, *Mexico*.
B.S. in Mathematics. GPA: 9.7/10
- Highest GPA of the class 2011-2016

Research interests

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

Publications and working papers

B. Sha, R. Astudillo and P.I. Frazier, "Mixed integer linear programming under preference uncertainty " (Finalist, INFORMS Undergraduate Operations Research Prize Competition, 2020), *Working paper*.

R. Astudillo, D.R. Jiang, M. Balandat, P.I. Frazier, and E. Bakshy, "Multi-step Bayesian optimization with unknown costs", *Working paper*.

R. Astudillo and P.I. Frazier, "Bayesian optimization of function networks", *Submitted*.

S. Cakmak, R. Astudillo, P.I. Frazier and E. Zhou, "Bayesian optimization of risk measures", *Advances in Neural Information Processing Systems, 2020*.

R. Astudillo and P.I. Frazier, "Multi-attribute Bayesian optimization with interactive preference learning", *International Conference on Artificial Intelligence and Statistics, 2020*.

R. Astudillo and P.I. Frazier, "Bayesian Optimization of composite functions", *International Conference on Machine Learning, 2019*.

R. Astudillo and P.I. Frazier, "Multi-attribute Bayesian optimization under utility uncertainty", *NIPS Workshop on Bayesian Optimization, 2017*.

Selected presentations

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*.

Nov 2018 "A utility uncertainty approach to multi-attribute Bayesian optimization", *INFORMS Annual Meeting, Phoenix, AZ*.

Dec 2017 "Multi-attribute Bayesian optimization under utility uncertainty", *NIPS Workshop on Bayesian Optimization, Long Beach, CA*. (contributed poster)

Selected graduate coursework

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

Industry experience

Oct 2020- Mar 2021 **Facebook**, *Menlo Park, CA*.
Visiting Researcher
- Developed Bayesian optimization algorithms for problems with unknown evaluation costs

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

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

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

Teaching experience

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

Selected awards

2015 Second Prize - XXII International Mathematics Competition for University Students (IMC), Blagoevgrad, Bulgaria.

2014 Third Prize - VI Iberoamerican Interuniversity Mathematics Competition (CIIM), San Jose, Costa Rica.

2014 Third Prize - XXII International Mathematics Competition for University Students (IMC), Blagoevgrad, Bulgaria.

2014 *Orgullo UG* Academic Excellence Award - University of Guanajuato.

2012-2016 Academic Excellence Fellowship - Center for Research in Mathematics.

Computer skills

Development MATLAB, Python, R

Tools Git, LaTeX, Microsoft Office

Languages

English (proficient), Spanish (native)