# Saul Toscano-Palmerin

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RESEARCH INTERESTS Simulation optimization, Bayesian optimization, optimal learning, machine learning, sequential decision-making and transportation systems.

#### **EDUCATION**

### Cornell University, USA

Ph.D. in Operations Research and Information Engineering, GPA: 4.2/4.3, expected December 2019

- Advised by Peter I. Frazier
- Minors: Computer Science and Statistics

# CIMAT-Center for Mathematical Research, Mexico

B.A. in Mathematics, GPA: 9.71/10, June 2013

- Highest GPA of the class 2008-2013
- Excellence Fellowship awarded by the Mexican government

# Industry Experience

# Two Sigma, USA

Quantitative Researcher Intern, May 2019 - August 2019

- Market impact simulator based on the latent order book model.
- Optimal execution with forecasts and the linear propagator model using dynamic programming.

### Uber, USA

Data Scientist Intern, June 2016 - June 2017

• Lead developer for a major redesign of Uber's pricing system, route-based pricing https://marketplace.uber.com/pricing/route-based-pricing

#### Papers

- S. Toscano-Palmerin and P.I. Frazier, "Bayesian Optimization with Expensive Integrands", 2018. Submitted. https://arxiv.org/abs/1803.08661
- S. Toscano-Palmerin and P.I. Frazier, "Effort Allocation and Statistical Inference for 1-dimensional Multistart Stochastic Gradient Descent", Winter Simulation Conference, 2018.
- J. Wu, S. Toscano-Palmerin, P. I. Frazier and A. G. Wilson, "Practical Multi-fidelity Bayesian Optimization for Hyperparameter Tuning", *Conference on Uncertainty in Artificial Intelligence*, 2019. https://arxiv.org/pdf/1903.04703.pdf
- S. Toscano-Palmerin and 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. https://arxiv.org/abs/1602.02338
- S. Toscano-Palmerin and P.I. Frazier, "Asymptotic Validity of the Bayes-Inspired Indifference Zone Procedure: the Non-Normal Known Variance Case", Winter Simulation Conference, 2015. http://arxiv.org/pdf/1508.07720.pdf

## Teaching Cornell University, Instructor

- ☐ Big Data Technologies (ORIE 5270), Spring 2018, Fall 2018, Masters level.
  - Course rating: 3.7/5.0; Mean course rating (College of Engineering, Cornell University): 3.63/5.0
  - Topics: Statistical and software tools for data mining of massive datasets, graphical display, machine learning, and natural language processing.
  - https://toscanosaul.github.io/saul/teaching/orie5270/
- □ Computational Methods in Operations Research (ORIE 6125), Spring 2018, PhD level.
  - Topics: Computational tools to perform research in operations research and related fields.
  - $\bullet \ https://toscanosaul.github.io/saul/teaching/orie6125/$

AWARDS 2014–2015 Mexican Government Fellowship

2013–2014 McMullen Fellowship

#### SOFTWARE Bayesian Global Optimization (BGO) Package

Python-based Bayesian global optimization software.

https://github.com/toscanosaul/stratified\_bayesian\_optimization

### New York City's Citi Bike System Simulation

Python-based queuing simulation based on New York City's Citi Bike system.

https://github.com/toscanosaul/BGO/tree/master/CitiBike

Relevant Development: Python, Java, R, C, C++, Matlab, PySpark/MLlib, SQL

SKILLS Languages: English, Spanish.