Daniele Bracale

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GitHub Profile
LinkedIn Profile
Google Scholar
Personal Site

Education

- **Ph.D in Statistics** *September, 2021 - Today*
  University of Michigan (Ann Arbor) GPA: 3.98
- **MS in Stochastics and Data Science** *October, 2020*
  University of Turin (Italy)
- **BS in Mathematics** *July, 2016*
  University of Turin (Italy)

Work Experiences

- **Johnson&Johnson, Biosense Webster** *May 2024 - August 2024*
  Clinical Data Scientist Summer Intern Irvine , CA (USA)
  – I developed a statistical model to generate Prediction Intervals for recommending clinical devices to medical professionals. The model was developed with theoretical proofs ensuring statistical guarantees, such as convergence and probability coverage. The results were validated through simulation studies and applied to a real dataset provided by J&J. My work has been accepted at the MedTech Data Science Showcase 2024 conference for a poster presentation entitled *"Constructing Prediction Intervals with Ensemble Machine Learning Models".*
- **University of Michigan** *August 2021 - Today*
  Graduate Student Instructor (GSI)/ Tutor for Master's and Ph.D. students Ann-Arbor
  – As a GSI, I taught Statistics courses ranging from data mining and applied regression to theoretical statistics and stochastic processes. As a tutor for Master's students, I taught linear algebra and advanced calculus, while as a tutor for Ph.D. students, I taught advanced machine learning.

Relevant Projects

- **Dynamic Pricing under Shape Constraints** *August 2022-Today*
  University of Michigan, Ann Arbor (USA)
  This project focuses on optimization in operations management, specifically on dynamic pricing strategies involving firms and customer interactions. I developed non-parametric dynamic pricing systems that enable firms to achieve high revenue with minimal shape-constrained economic assumptions, validated through simulations and real-world data. Initially applied in monopolistic settings, I am now extending these techniques to multi-firm scenarios, aiming to develop algorithms that converge to Nash equilibrium with low regret.
- **ERC: Nonparametric Bayes and empirical Bayes for species sampling problems.** *November 2020-August 2021*
  Collegio Carlo Alberto, Turin (Italy)
  In this project, I contributed to the study of the theoretical convergence of Neural Networks (NN). I developed theoretical proofs for the convergence of Gaussian Deep NN and Convolutional Stable-distributed NN. My results have been published at the ICLR and NeurIPS conferences.
  * "Large-width functional asymptotics for deep Gaussian neural networks". Published at ICLR 2021.
  * "Infinite-channel deep stable convolutional neural networks". Published at NeurIPS 2021.

Technical Skills and Interests

Languages: Italian(native), Portuguese (fluent), English (fluent)
Coding: R, Python, Docker
Interests: Dynamic Pricing, Operation Management, Performative Predictions, Neural Networks, Optimal Transport

Relevant Conferences

- **CMStatistics (2024)** *"Learning the Distribution Map in Reverse Causal Performative Prediction" Invited*
- **JSM (2023):** *"Semi-parametric Non-Smooth Optimal Dynamic Pricing" Contributed*

Relevant Awards

- *Outstanding Graduate Student Service Award - honorable mention* *2023*
- *Outstanding Graduate Student Instructor Award-Team* *2023*
- *Michigan Difference Student Leadership Award* *(2023/2024)*
- *Harvey G. & Joyce H. Behner Graduate Fellowship Award* *2024*