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matteocourthoud.github.io

matteocourthoud

in matteo-courthoud

Skills —

Statistics: causal inference, A/B testing, experimental design, bootstrapping, GMM, maximum likelihood, bayesian inference, hierarchical models

Machine Learning: supervised and unsupervised models, bagging, boosting, NLP (BERT), reinforcement learning, double machine learning

Mathematics: numerical optimization, gradient descent, dynamic programming

Economics: industrial organization, demand estimation, recommendation systems, game theory, market design, combinatorial auctions

Computing: parallelization, multithreading, probabilistic programming

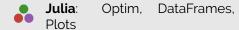
Toolbox —

Colab • Github • Unix • Latex

SQL • Docker • AWS

Coding —





R: tidyverse, dplyr, fixest, staggered, ggplot2

Misc: Stata, Matlab, Go, C++, Visual Basic, Pascal

MATTEO COURTHOUD

Ph.D. Candidate in Economics

Work Experience



Data Science PhD Intern. fall 2022

Google, Switzerland

Developed a new estimator for large-scale experiments to test returns to advertising, combining quasi-experimental methods (diff-in-diffs, synthetic control) with paired experimental design. Wrote a new simulation library to test new and existing estimators at scale, combining real data and simulated experiments.



Economic Consultant, 2021 - 2022 Crawford Consulting GmbH Provided independent economic research on strategic entry, exit, and pricing decisions for Amazon.com, using both observational and quasi-experimental methods on proprietary business data.



Teaching Assistant, 2018 - 2022 **University of Zurich**, Switzerland Lectured, assisted and prepared teaching material for multiple econometrics, machine learning, and industrial organization classes, both at MSc and PhD level.



Economics Intern, spring 2016 **DG COMP**, EU Commission Provided economic and statistical analysis of auction data for the Halliburton-Baker Hughes (10B\$) merger case, combining applied causal inference methods with structural modeling.

Education



Ph.D. Economics, 2017 - now University of Zurich, Switzerland Specialization: Industrial Organization, Applied Econometrics. Advisors: *Gregory Crawford*, *Armin Schmutzler*.



Visiting Doctoral Student, fall 2021 **Yale University**, United States Host: *Steven Berry*, at the Department of Economics.



M.Sc. Economics. 2014- 2016

Bocconi University, Italy

B.Sc. Economics, 2011- 2014

Bocconi University, Italy

Research

· Ratings as a Barrier to Entry

Studied the impact of rating systems on platform dynamics, using data on Airbnb listings. Estimated demand for listings and a structural model of dynamic hosts' entry and exit to assess welfare effects.

Reinforcement Learning Pricing Algorithms



Implemented reinforcement learning pricing algorithms and experimentally studied their strategic interactions. Proposed a new method to detect collusion via adversarial learning.

Dynamic Stochastic Games and Competition Policy



Built a dynamic computational model of firm competition, entry, and exit to study anti-competitive behavior in complementary industries with returns to scale, suggesting policy interventions.

Other

- Technical Writer, on Towards Data Science on statistics and causal inference
- 1st place, Machine Learning Datathlon at ETH Zurich (2021)
- Languages: Italian (native), English, French (fluent), German, Spanish (basic)