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matteo-courthoud

Skills —

Statistics: causal inference, A/B testing, MonteCarlo simulation, bootstrapping, bagging, bayesian inference, GMM, maximum likelihood

Machine Learning: supervised and unsupervised models, NLP (BERT), reinforcement 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

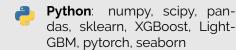
Toolbox ——

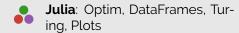
Github • Unix • Latex

SQL • MS Office • CSS • HTML

Docker • AWS • Redshift

Coding —





R: tidyverse, dplyr, data.table, ggplot2

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

MATTEO COURTHOUD

Ph.D. Candidate in Economics

Education

2017 - now **Ph.D. Economics**

University of Zurich, Switzerland

Specialization: Industrial Organization and Competition Policy.

Advisors: Gregory Crawford, Armin Schmutzler.

2021 **Visiting Doctoral Student** Yale University, United States

Host: Steven Berry, at the Department of Economics.

2014- 2016 M.Sc. Economics, summa cum laude Bocconi University, Italy

2011- 2014 **B.Sc. Economics** Bocconi University, Italy

Work Experience

2017 - now **Teaching**

University of Zurich, Switzerland

Prepared new teaching material for multiple classes in econometrics, machine learning, and industrial organization. Lectured in front of classes of up to 150 students at both MSc and PhD level. Code, notes and lecture slides available on my Github.

2021 - now **Economic Consultant**

Crawford Consulting

External consultant for large retail platform on antitrust-related concerns. Provided econometric analysis and causal inference of proprietary data using R, SQL, Redshift, AWS EC2.

spring 2016 **Economics Intern** DG COMP Chief Economist Office, EU Commission Provided economic and statistical analysis of auction data for

the Halliburton-Baker Hughes (10B\$) merger case. Collaborated with large and diverse team and presented results to multiple

audiences.

Research

· Common Ownership and Market Boundaries

Generated a time-varying measure of S&P500 firm similarity using a zeroshot clustering model. The model takes as input BERT embeddings of product descriptions and is trained on market definitions from the EU commission. Estimated the causal effect of common ownership on product similarity exploiting quasi-experimental variation in ownership.

· Reinforcement Learning Pricing Algorithms

Implemented Q-learning pricing algorithms and experimentally studied their strategic interactions, proposing a new method to detect collusion. Introduced an adversarial market maker algorithm, and studied its impact on collusion. Presented work at multiple conferences.

· Dynamic Stochastic Games and Competition Policy

Built a computational model to study firm competition in complementary industries with returns to scale, highlighting complementarities in anticompetitive practices. Presented work at multiple conferences. Introduced new computational tools for the analysis of large dynamic stochastic games.

Other

- 1st place, Machine Learning Datathlon at ETH Zurich (2021)
- Referee for the Journal of Competition Law and Economics (2021)
- Languages: Italian (native), English (fluent), French, German, Spanish (basic)