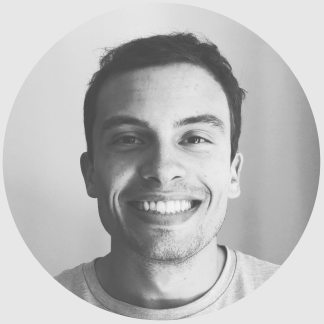

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Skills

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

Machine Learning: supervised and unsupervised models, bagging, boosting, 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

SQL • Databricks • Github • Unix

SQL • Docker • AWS

Coding

Python: numpy, scipy, pandas, sklearn, XGBoost, LightGBM, flaml, PyMC, EconML, causalml, seaborn, plotly

R: tidyverse, dplyr, fixest, staggered, grf, ggplot2

Julia: Optim, DataFrames, Plots

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

MATTEO **COURTHOUD**

Senior Applied Scientist

Work Experience

Senior Applied Scientist, Aug 2023 - ongoing — **Zalando**, Berlin
Estimated value of Zalando Plus subscription program, combining double-machine learning observational causal inference methods and customer lifetime value projections. Optimized customer targeting based on heterogeneous treatment effect estimation on customer lifetime value.

Data Science PhD Intern, fall 2022 — **Google**, Switzerland
Developed new generation of estimators for geographical experiments to test returns to advertising, combining quasi-experimental methods (diff-in-diffs, synthetic control) with paired experimental design. Wrote production-level library to test 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 courses:
- MsC Econometrics and Machine Learning (Damian Kozbur)
- PhD Econometrics (Damian Kozbur)
- PhD Industrial Organization (Gregory Crawford)

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 - 2023 — **University of Zurich**, Switzerland
Specialization: Econometrics, Statistics, Industrial Organization.
Advisors: *Gregory Crawford*, *Armin Schmutzler*, *Damian Kozbur*.

Research areas:
- Dynamic structural estimation of ratings and reviews externalities in the peer-to-peer rental market.
- Detection and prevention of pricing algorithmic collusion in high-frequency markets using reinforcement learning.
- Dynamic stochastic games of oligopolistic competition in presence of product complementarities and economies of scale.

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

M.Sc. Economics, 2014- 2016 — **Bocconi University**, Italy
Specialization: Econometrics, Industrial Organization.

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

Other

- **Technical Writer**, on Towards Data Science on statistics and causal inference
- **Presenter**, PyData Zurich (2023)
- **1st place**, Machine Learning Datathlon at ETH Zurich (2021)
- **Languages**: Italian (native), English, French (fluent), German, Spanish (basic)