

# Philipp Ratz

ECONOMETRICIAN · ECONOMIST · DATA SCIENTIST

Lucerne, Switzerland, YoB 1993, Nat: CH, DE

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## Professional Experience

### Senior Data Scientist / Data Scientist

Bern, CH

LA MOBILIÈRE

July 2019 - Aug. 2021

- Analytical lead for the implementation of multiple productive propensity scoring systems, with combined streaming and offline data
- Epic Owner for coordinated AI scores- and general "next best action" framework
- Statistical consulting for a range of business units using structured and unstructured data, supervised and unsupervised learning
- Lead in setting up guidelines & structures for data science projects and ensure reproducibility within a group of data scientists

### Data Scientist

Bern, CH

CROSS COMPANY PROGRAM (LA MOBILIÈRE, SWISS POST, FEDERAL RAILWAYS) - INTERNSHIP

Feb. 2018 - Jan. 2019

- Topic modelling with raw email data (unsupervised). Topic analysis of vendor notes (supervised)
- Power consumption model to forecast range of electric vehicles with the use of sensor data (implemented on AWS)
- Data quality control modelling to assess representativity and plausibility of data sources (unsupervised) in DevOps Group
- Calculation of customer churn statistics and predictive churn model. Implementation of analytics dashboard

### Scientific Assistant

Bonn, GER

DEPARTMENT OF ECONOMICS, UNIVERSITY OF BONN

Oct. 2016 - Aug. 2017

- Provided advice and evaluation to potential as well as current master students, general administrative aid to the Department, maintenance of the website. Evaluation and basic analysis of diverse administrative data

### Other part-time experience

Geneva, Lucerne, Nyon

CSS INSURANCE / GENERALI / MERCEDES-BENZ

2012 - 2016

- Accounting, management of assistant tasks, management of accounts related to assistance tasks.
- Presentation of cars and related products to customers

## Education

### Ph.D. in Mathematics | Statistics track

Montreal, CA

Supervisor: **Arthur Charpentier**

UNIVERSITÉ DU QUÉBEC À MONTREAL

Sep. 2021 -

- Coursework at: McGill & UQAM. Topics: Games and RL, Panel Statistics and Probabilistic Modeling  
Final Coursework GPA 4.3/4.3
- Research on Graphs, Repeated Games and Fairness & Statistical Properties of Deep learning
- Consultant Data Science at Imperial College London

### M.Sc. in Economics | Econometrics and Statistics track

Bonn, GER/Paris, FR

BGSE (BONN GRADUATE SCHOOL OF ECONOMICS)

Oct. 2016 - Jan. 2018

ENSAE (ÉCOLE NATIONALE DE LA STATISTIQUE ET DE L'ADMINISTRATION ÉCONOMIQUE) - EXCHANGE

& Feb. 2019 - June 2019

- Introduction to Actuarial Sciences and ML, intermediate topics in Mathematics, advanced topics in Econometrics and Economics
- Thesis: Semi-Nonparametric Forecasting via ANN-sieves

### B.A. in International Relations | Economics and Law tracks

Geneva, CH

UNIVERSITY OF GENEVA

Sep. 2013 - Jun. 2016

- Foundations in: Economics, Econometrics, Finance, (mainly international- and trade-) Law, Probability, Political Science and Statistics

### Bilingual Swiss Federal Matura | Economics and Law track

Lucerne, CH/Rotorua, NZ

KANTONSSCHULE ALPENQUAI

WESTERN HEIGHTS HIGH SCHOOL

Aug. 2006 - Jun. 2012

## Skills

**Programming** **Statistical:** R, Python (both advanced), Scala, SAS (Guide, Miner, Visual Analytics), Matlab (all basic)

**Frameworks:** Pytorch, basic TensorFlow, basic CBC, basic STAN

**General:** Experience in HPC with GPU, Apache Hadoop/Hive/Spark, AWS (developer course)

Docker, Bash, Git,  $\LaTeX$ , SQL

**Interests** Machine- and Reinforcement Learning, Optimal Transport and Fairness

**Languages** Native in German, Fluent in English and French (worked, studied and taught in both), learning Italian

# Articles

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## PUBLISHED

Fairness in Multi-Task Learning via Wasserstein Barycenters

Francois Hu, Philipp Ratz, Arthur Charpentier

*Joint European Conference on Machine Learning and Knowledge Discovery in Databases – ECML PKDD (2023). 2023*

## PREPRINTS

Nonparametric Value-at-Risk via Sieve Estimation

Philipp Ratz

*arXiv preprint arXiv:2205.07101 (2022). 2022*

Collaborative insurance sustainability and network structure

Arthur Charpentier, Lariosse Kouakou, Matthias Löwe, Philipp Ratz, Franck Vermet

*arXiv preprint arXiv:2107.02764 (2021). 2021*

## WORKING PAPERS

EFFECTS OF THE INTRODUCTION OF MACHINE LEARNING IN INSURANCE MARKETS

- With Yves-Alexandre de Montjoye and Arthur Charpentier

PARAMETRIC FAIR PROJECTION WITH STATISTICAL GUARANTEES

- 2023, With Francois Hu and Arthur Charpentier, submitted

TASK EXPERT COMBINATION WITH NEURAL OUTPUTS

- 2023, Ready to be submitted

DEEP INDIVIDUAL KAPLAN-MEIER ESTIMATION

- 2023, Ready to be submitted

# Conferences (Presenting)

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## Insurance Data Science

*London, UK*

PRESENTER FOR CENSORED REGRESSION MODELS

*June 2023*

- Presentation of Censored Regression and Multitask learning

## Statistical Society of Canada Annual Meeting

*Ottawa, CA*

ADVANCED MODELS IN FINANCE AND INSURANCE

*June 2023*

- Presentation of Censored Regression and Multitask learning

## CFE/CSE

*London, UK*

INVITED SESSION: ESTIMATION OF EXTREMES

*December 2022*

- Presentation of nonparametric quantile estimation

## Inform's Annual Meeting

*Indianapolis, USA*

INVITED SESSION: DECENTRALIZED INSURANCE

*October 2022*

- Presentation for decentralized insurance

## VieCo Conference on Financial Econometrics

*Copenhagen, DNK*

PRESENTER FOR NONPARAMETRIC VALUE-AT-RISK ESTIMATION VIA SIEVES

*June 2022*

- Presentation work with nonparametrics in financial econometrics

## CSSC Canada Conference

*Online*

PRESENTER FOR COLLABORATIVE INSURANCE SUSTAINABILITY AND NETWORK STRUCTURE

*May 2022*

- Presentation for work on decentralized insurance and graph-based models

## IME (Insurance: Mathematics and Economics)

*Online*

PRESENTER FOR COLLABORATIVE INSURANCE SUSTAINABILITY AND NETWORK STRUCTURE

*July 2021*

- Presentation for work on decentralized insurance and graph-based models

## ASTIN 2021 Online Colloquium

*Online*

PRESENTER FOR COLLABORATIVE INSURANCE SUSTAINABILITY AND NETWORK STRUCTURE

*May 2021*

- Presentation for work on decentralized insurance and graph-based models

## Grants/Awards

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- 2023 **Winner Best Student Presentation**, Statistical Society of Canada (Actuarial Science Section)  
2022 **3<sup>rd</sup> Prize best PhD Poster-Presentation**, CSSC Conference  
2021 **Full PhD Scholarship**, For PhD in Mathematics, Joint Research Initiative, AXA Research Fund

## Miscellaneous

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### Leader and Team-Leader

*Lucerne, CH*

SCOUTING ORGANIZATION

- Lead a team of young adults, reviewed and provided advice for organised activities
- Years of experience in public speaking, team organization, leadership, representation towards the public

### Air Force Pilot Candidate

*Dübendorf & Birrfeld, CH*

SPHAIR (SWISS AIRFORCE)

- Passed theoretical and practical examinations as well as psychological stress evaluation for Airforce Pilots

### Mathematics Tutor

*Geneva, CH*

NON REMUNERATED AID FOR YOUNG ADULTS

- Explaining mathematical concepts up to level of the Swiss Federal Matura.