

Philipp Ratz

ECONOMETRICIAN · ECONOMIST · DATA SCIENTIST

Lucerne Switzerland & Montréal Canada, YoB 1993, Nat: CH, DE

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Professional Experience

Data Scientist II & Data Scientist I

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, DE

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 MONTRÉAL

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, Fairness & Statistical Properties of Deep learning
- Consultant Data Science at Imperial College London

M.Sc. in Economics | Econometrics and Statistics track

Bonn, DE/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, 5yrs+), 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)

Bash, Docker, 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

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

Mitigating Discrimination in Insurance with Wasserstein Barycenters

Francois Hu, Philipp Ratz, Arthur Charpentier

(2023). 2023

PREPRINTS

Addressing Fairness and Explainability in Image Classification Using Optimal Transport

Philipp Ratz, François Hu, Arthur Charpentier

arXiv preprint arXiv:2308.11090 (2023). 2023

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

Conferences (Presenting)

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, US

INVITED SESSION: DECENTRALIZED INSURANCE

October 2022

- Presentation for decentralized insurance

VieCo Conference on Financial Econometrics

Copenhagen, DK

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

2023 **Winner Best Student Presentation**, Statistical Society of Canada (Actuarial Science Section)

2022 **3rd Prize best PhD Poster-Presentation**, CSSC Conference

2021 **Full PhD Scholarship**, For PhD in Mathematics, Joint Research Initiative, AXA Research Fund

Miscellaneous

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.