




# BENEDIKT J. KOCH

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## EXECUTIVE SUMMARY

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Statistics PhD student at Harvard University working on Causal Inference Theory and Methodology, with strong background in Statistical Machine Learning and Probability Theory. Prize-winning MSc graduate from the University of Oxford and ETH Zurich. Previous Data Science employment at QuantCo (Healthcare) and HSBC (Finance), with a focus on Statistical Modeling. Extensive military background with training in leadership and teamwork.

## EDUCATION

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**PhD Statistics**, Harvard University, USA *September 2023 – 2028 (est)*

- Advisor: Kosuke Imai
- Research Focus: Causal Inference, Policy Learning, Probability Theory

**MSc Statistical Science**, University of Oxford, UK *October 2022 – September 2023*

- GPA: 82.2/100 (top 5%), graduated with “Distinction”
- Awarded “Schools Prize” for academic excellence from St Edmund Hall College
- Master Thesis: “Identification in Proximal Causal Learning” with Frank Windmeijer in the field of Causal Inference and Machine Learning

**MSc Applied Mathematics**, ETH Zurich, Switzerland *September 2019 – December 2021*

- GPA: 5.92/6.0 (top 5%), graduated with “Distinction”
- Master Thesis: “Robust asymptotic growth in Stochastic Portfolio Theory (SPT) under long-only constraints and stochastic covariance structure” in the field of Probability Theory and Stochastic Calculus with Josef Teichmann
- My master thesis’s led to a research collaboration solving a 20-year-old research question in SPT

**BSc Mathematics**, University of Vienna, Austria *October 2016 – July 2019*

- GPA: 1.3/1.0\* (top 5%), graduated with “Distinction”
- Awarded University’s “Performance Scholarship” for academic excellence every year

## PUBLICATIONS & WORKING PAPERS

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- **Individualized Treatment Rules under Spatial and Temporal Interference**, *Working Paper*, Koch, Imai and Yi
- **Identification in Proximal Causal Learning**, *Working Paper*, Koch and Windmeijer
- **Ergodic robust maximization of asymptotic growth under stochastic volatility**, 2022, *Finance and Stochastics (under revision)*, Itkin, Koch, Larsson and Teichmann, *arXiv: <https://arxiv.org/abs/2211.15628>*

## EXPERIENCE

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**Data Scientist**, QuantCo, Germany *September 2021 – September 2022*

- Designed and implemented a new statistical health insurance pricing model with ML techniques to determine fair health insurance prices for over 800,000 people without discriminating by race, gender or wealth
- Developed ML tools for actuaries to appropriately allocate funds in the amount of 120,000,000€
- Re-engineered the pricing process, which led to a hundredfold increase in speed and efficiency

**Data Science & Engineering Intern**, HSBC, UK *June 2021 – August 2021*

- Proposed and implemented an improved statistical credit risk-scoring model which remains in use today
- Designed a new method of aggregating data which led to a twelvefold increase in usable data
- Analysed and transformed data in Apache Spark

**Student Assistant**, ETH Zurich, Switzerland *Spring 2021*

- Student assistant for the course “Probability Theory and Statistics” for mathematicians

**Mathematical Analyst**, Other Internships, Austria

- Ministry of Defence: designed and implemented a trajectory prediction algorithm *February 2019*
- Aon Austria: data and mathematical insurance analysis *August 2018 – September 2018*

**Prospective Officer**, Austrian Armed Forces, Austria

- Leading supply chain position responsible for supplying up to 700 people *since August 2016*
- Recruit Instructor (Sergeant), trained groups of up to 120 new conscripts *July 2017 – August 2017*
- Military service to become an officer of the Austrian Miliz (active reserve) *September 2015 – August 2016*

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\*Austrian University Grading Scale from 1.0 (best) to 5.0 (fail)

## TECHNICAL SKILLS AND INTERESTS

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<b>Programming Languages</b>	Python (advanced), R (intermediate), MATLAB (intermediate)
<b>Databases</b>	SQL (intermediate), Apache Spark (basic)
<b>Languages</b>	German (native), English (fluent) - 114/120 TOEFL iBT
<b>Extracurricular Experience</b>	Oxford AI Society, Head of parish youth group (voluntary work)
<b>Interests</b>	Ski Tours, Running, Classical Dance, Philosophy and History