

Robert Bajons

POSTDOCTORAL RESEARCHER IN STATISTICS AND MACHINE LEARNING

Vienna, Austria

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Education

Vienna University of Economics and Business

PHD IN STATISTICS

- since 2022: Statistical learning for sports analytics (with Prof. Kurt Hornik)
- 2020-2021: Modelling CDS-spreads via Markov modulated affine processes (with Prof. Rüdiger Frey)

Vienna, Austria

Sept. 2020 - Dez. 2025

Vienna University of Economics and Business

MSC IN QUANTITATIVE FINANCE

- Thesis Title: Bayesian portfolio optimization : an analysis of an Austrian stock market environment

Vienna, Austria

Oct. 2018 - Aug. 2020

Technical University Vienna

MSC IN FINANCIAL AND ACTUARIAL MATHEMATICS

- Thesis Title: Hedging under integer constraints

Vienna, Austria

Sept. 2017 - Aug. 2020

Technical University Vienna

BSc IN FINANCIAL AND ACTUARIAL MATHEMATICS

Vienna, Austria

Oct. 2012 - Aug. 2017

Employments and Work Experience

Vienna University of Economics and Business

Vienna, Austria

POSTDOCTORAL RESEARCHER

- Project: "Learning causal structures from dependent data".
- Project aim: Develop and extend non-parametric conditional independence tests for dependent data (with a focus on discrete time series).

Vienna, Austria

Jan. 2026 - Aug. 2026

Vienna University of Economics and Business

TEACHING AND RESEARCH ASSISTANT

- Advisor: Prof. Kurt Hornik
- Teaching duties at bachelor and master level each semester.
- Yearly research presentations in Brown Bag Seminar of the Institute for Statistics and Mathematics.

Vienna, Austria

Sept. 2020 - Aug. 2026

IREEN GmbH

Vienna, Austria

MACHINE LEARNING ENGINEER/FREELANCER

Dec. 2021 - Feb 2024

- Development and implementation of an algorithm for the detection of duplicated objects across various real estate platforms.
- Generation of automated reports on the current real estate market across various platforms.
- Development of a statistical model to predict the duration of online real estate offers.

Vienna University of Economics and Business

Vienna, Austria

CONSULTANT

Mar. 2022 - Oct. 2022

- Clustering and replication of non-maturing deposits of a large Austrian banking institution to enhance the liquidity risk management.

Raiffeisen Capital Management

Vienna, Austria

STUDENT SUPPORT IN FUNDMANAGEMENT (TEAM: MANAGER SELECTION)

Oct. 2019 - Mar. 2020

- Development of a shiny app for automatic screening of funds.
- Development of a shiny app for screening and analysing funds based on ESG criteria.
- Development of several other small shiny apps and various ad hoc analyses.

Raiffeisen Bank International

Vienna, Austria

STUDENT SUPPORT IN RISK METHODS AND ANALYTICS (TEAM: ECONOMIC CAPITAL METHODS)

Sept. 2017 - Oct. 2018

- Implementation of algorithms in R for measuring the impact of EBA Stresstests.
- Implementation of an algorithm for computing the LGD under the advanced IRB approach.
- Perform ad hoc analyses on economic capital calculations.

Vienna Insurance Group

Vienna, Austria

STUDENT SUPPORT IN LIFE INSURANCE (TEAM: TARIFMATHEMATIK)

Apr. 2017 - Sept. 2017

Generali Insurance

Vienna, Austria

INTERN IN LIFE INSURANCE (TEAM: BETRIEBLICHE LEBENSVERSICHERUNG)

Jul. 2016 - Aug. 2016

Teaching Experience

COURSES

Statistical and Machine Learning

VIENNA UNIVERSITY OF ECONOMICS AND BUSINESS (WU VIENNA)

Vienna, Austria

2024, 2025

- Course of the Quantitative Finance master program at WU Vienna.
- Topics: regularized regression, cross-validation and bootstrap, tree based methods, ensemble methods, deep learning.

Industry Lab

VIENNA UNIVERSITY OF ECONOMICS AND BUSINESS (WU VIENNA)

Vienna, Austria

2023

- Course of the Quantitative Finance master program at WU Vienna.
- Supervising a project of a group of 5 Students with an industry partner of WU Vienna.

Workshop: Introduction to Data Analytics Using R

VIENNA UNIVERSITY OF ECONOMICS AND BUSINESS (WU VIENNA)

Vienna, Austria

2023, 2025

- Two day workshop for academic staff of WU Vienna on the basics of R.
- Topics: Intro to R, data manipulation and visualization, linear regression in R.

Statistik

VIENNA UNIVERSITY OF ECONOMICS AND BUSINESS (WU VIENNA)

Vienna, Austria

2021 - 2026

- Teaching the entry-level statistics course for all bachelor degrees at WU Vienna (one course per semester).
- Topics: data visualization, hypothesis testing, linear regression.

Computing, Statistics 1, Continuous time Finance 1

VIENNA UNIVERSITY OF ECONOMICS AND BUSINESS (WU VIENNA)

Vienna, Austria

Oct. 2019 - June. 2020

- Tutoring master degree students of the Quantitative Finance master program at WU Vienna.
- Main tasks: providing exam preparation, holding exercise classes and colloquia, correcting homework.

STUDENT (CO-)SUPERVISION

ADVANCED SOCCER ANALYTICS VIA PITCH CONTROL MODELS: APPLICATIONS, ENHANCEMENTS AND VALIDATION.

TOBIAS HARRINGER

2025

MASTER THESIS (CO-SUPERVISED WITH KURT HORNICK)

CAN COMPLEX MACHINE LEARNING MODELS OUTPERFORM A DYNAMIC BIVARIATE POISSON MODELS FOR PREDICTING AND BETTING ON FOOTBALL GAMES?

KÖRBEL HARALD

2025

BACHELOR THESIS (CO-SUPERVISED WITH LUCAS KOOK)

RESIDUALIZED GAX TO EVALUATE PLAYER PERFORMANCE.

SCHEER SIMON

2025

BACHELOR THESIS (CO-SUPERVISED WITH LUCAS KOOK)

VISUALIZING SOCCER DATA USING R: EXPLORING THE BEAUTIFUL GAME THROUGH DYNAMIC VISUALIZATIONS.

PINZ LUKAS

2025

BACHELOR THESIS (CO-SUPERVISED WITH KURT HORNICK)

ADVANCING IN PLAYER PERFORMANCE ANALYSIS FOR MEN'S PROFESSIONAL FOOTBALL: MACHINE LEARNING APPROACHES FOR EXPECTED GOALS.

SINA HAGHGOO

2024

BACHELOR THESIS (CO-SUPERVISED WITH KURT HORNICK)

AI IN FOOTBALL: EXPECTED GOALS IN FA WOMEN'S SUPER LEAGUE.

FELIX SCHINKOVITS

2024

BACHELOR THESIS (CO-SUPERVISED WITH KURT HORNICK)

MODERN METHODS OF SENTIMENT ANALYSIS.

NIKOLAUS VETTER

2023

BACHELOR THESIS (CO-SUPERVISED WITH KURT HORNICK)

Research Output

JOURNAL PUBLICATIONS

PLUS-MINUS MODELS FOR EVALUATING AND SCOUTING SOCCER PLAYERS USING POSSESSION SEQUENCES.

ROBERT BAJONS, KURT HORNICK

IMA JOURNAL OF MANAGEMENT MATHEMATICS

PDF, DOI.

2025-04-17.

PEP: A TACKLE VALUE MEASURING THE PREVENTION OF EXPECTED POINTS.

ROBERT BAJONS, JAN-OLE KOSLIK, ROUVEN MICHELS, MARIUS ÖTTING

JOURNAL OF QUANTITATIVE ANALYSIS IN SPORTS

DOI.

2025-06-30

CONFERENCE PUBLICATIONS

ONE XG MODEL TO RULE THEM ALL? CHALLENGING THE MOST ACCURATE XG MODEL.

ROBERT BAJONS, TOBIAS HARRINGER

RESEARCH PAPER FOR THE HUDL PERFORMANCE INSIGHTS 2025

(pdf-link).

2025-11-14.

MACHINE LEARNING BASED STATISTICAL INFERENCE IN SPORTS ANALYTICS.

ROBERT BAJONS, LUCAS KOOK

PROCEEDINGS OF THE 39TH INTERNATIONAL WORKSHOP ON STATISTICAL MODELLING

(pdf-link).

2025-07-14-18.

ADAPTIVE GENERALIZED LOGISTIC LASSO AND ITS APPLICATION TO RANKINGS IN SPORTS.

ROBERT BAJONS, KURT HORNICK

IN: EINBECK, J., MAENG, H., OGUNDIMU, E., PERRAKIS, K. (EDS) DEVELOPMENTS IN STATISTICAL MODELLING. IWSM 2024.

CONTRIBUTIONS TO STATISTICS. SPRINGER, CHAM.

(pdf-link), DOI.

2024-07-15-19.

A WEIGHTED CURVE CLUSTERING APPROACH FOR ANALYZING PASS RUSH ROUTES IN AMERICAN FOOTBALL.

ROBERT BAJONS, KURT HORNICK

PROCEEDINGS OF THE 37TH INTERNATIONAL WORKSHOP ON STATISTICAL MODELLING

(pdf-link).

2023-07-16-21.

EVALUATING INDIVIDUAL FOOTBALL PLAYER PERFORMANCES: A DEBIASED MACHINE LEARNING APPROACH.

ROBERT BAJONS

PROCEEDINGS OF THE 6TH INTERNATIONAL CONFERENCE ON MATHEMATICS AND STATISTICS

(pdf-link), DOI.

2023

PREPRINTS

RETHINKING PLAYER EVALUATION IN SPORTS: GOALS ABOVE EXPECTATION AND BEYOND.

ROBERT BAJONS, LUCAS KOOK

(link).

2025.

THE PATH TO A GOAL: UNDERSTANDING SOCCER POSSESSIONS VIA PATH SIGNATURES.

DAVID HIRNSCHALL, ROBERT BAJONS

(link).

2025.

ANALYZING PASS RUSH IN THE NFL: A WEIGHTED K-MEANS CURVE CLUSTERING APPROACH.

ROBERT BAJONS, KURT HORNICK

(link).

2024.

CONFERENCE PRESENTATIONS

2025-11 Rethinking goals above expectation: Player evaluation in football using residualized scores.

Invited talk at the 2nd Workshop on Sports Analytics in Soccer 2025. TU Dortmund.

Dortmund,

Germany

2025-11 One xG model to rule them all? Challenging the most accurate xG model.

Invited talk at the Hudl Performance Insights 2025.

London, UK

2025-09 rMetrics: A statistically motivated framework for player evaluation using residualized scores.

Invited talk at the New England Symposium on Statistics in Sports (NESSIS) 2025. Harvard University.

Cambridge,

Massachussets, USA

Machine learning based statistical inference in sports analytics.

2025-07 Short paper contribution and presentation at the International Workshop on Statistical Modelling (IWSM)

2025. Statistical Modelling Society.

Limerick, Ireland

2025-06 A statistical view on xG and GAX: Rethinking goals above expectation (GAX).

Presentation selected for the Mathosport International Conference 2025. Mathosport International.

Luxembourg,

Luxembourg

2025-05 Machine learning based statistical inference in sports analytics.

Presentation selected for the AUEB Sports Analytics Workshop (SAW) 2025. AUEB Sports Analytics Group.

Athens, Greece

2025-02 Soccer analytics: A statistical view on xG and GAX.

Invited talk at Advanced Statistical Seminar of the Department of Probability and Mathematical Statistics at Charles University.

Prague, Czech

Republik

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|---------|---|-------------------------------|
| | Adaptive generalized logistic lasso and its application to rankings in sports. | |
| 2024-07 | Short paper contribution and presentation at the International Workshop on Statistical Modelling (IWSM) 2024. Statistical Modelling Society. | Durham, United Kingdom |
| 2024-05 | PEP: Evaluating Tackles in American Football. Presentation selected for the AUEB Sports Analytics Workshop (SAW) 2024. AUEB Sports Analytics Group. | Athens, Greece |
| 2023-12 | Curve clustering methods and their applications to sports analytics. Invited presentation at the International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics) 2023. Statistik Austria. HTW Berlin. | Berlin, Germany |
| 2023-10 | Penalized Regression in Action: Evaluating Football (Soccer) Players using Event Stream Data. Presentation selected for the Austrian Statistic Days 2023. Statistik Austria. | Vienna, Austria |
| 2023-09 | A Weighted Curve Clustering Approach for Analyzing Pass Rush Routes in American Football. Invited talk at the New England Symposium on Statistics in Sports (NESSIS) 2023. Harvard University. | Cambridge, Massachusetts, USA |
| 2023-07 | A Weighted Curve Clustering Approach for Analyzing Pass Rush Routes in American Football. Short paper contribution and poster presentation at the International Workshop on Statistical Modelling (IWSM) 2023. Statistical Modelling Society. | Dortmund, Germany |
| 2023-07 | Evaluating Individual Football Player Performances: A Debiased Machine Learning Approach. Short paper contribution and presentation at the 2023 6th International Conference on Mathematics and Statistics (ICoMS 2023). | Leipzig, Germany |
| 2023-05 | Evaluating Individual Football Player Performances using a Debiased Machine Learning Approach. Presentation selected for the AUEB Sports Analytics Workshop (SAW) 2023. AUEB Sports Analytics Group. | Athens, Greece |

Technical Skills

Proficient

R, PYTHON, R SHINY, R MARKDOWN, QUARTO, GIT

Familiar

C, C++, HTML, PYTHON DASH, YAML, CSS, SVN

Languages

Native

GERMAN

Fluent

ENGLISH, SPANISH

Familiar

FRENCH

Professional Services & Activities

PEER REVIEW

- Advances in Statistical Analysis
- Journal of Quantitative Analysis in Sports
- Journal of Sports Analytics

SOCIAL ACTIVITIES AND PUBLIC SERVICES

Albertus Magnus Schiclub

SKIING INSTRUCTOR

- Training youth teams for competitive alpine skiing.

Vienna, Austria

2009 - 2016

Austrian Bundesheer

MILITARY SERVICE

- Basic military education, completion of truck driving license.

Vienna, Austria

Sept. 2011 - Mar. 2021

Awards and Achievements

EDUCATIONAL

- 2025 **Winner of the Hudl Performance Insights 2025 research competition.**
Proposal selected for the Hudl Performance Insights 2025.
- 2024 **Honorable Mention at the NFL Big Data Bowl 2024.**
Kaggle competition hosted by the NFL.
- 2023 **Best Presentation Award ICoMS 2023.**
Awarded for the presentation on Evaluating Individual Football Player Performances: A Debiased Machine Learning Approach.
- 2020 **Performance Scholarship.**
Awarded by the Austrian government for achievements at the Vienna University of Economics and Business.
- 2019 **Performance Scholarship.**
Awarded by the Austrian government for achievements at the Vienna University of Economics and Business.

ATHLETIC

- Alpine Skiing:**
2 ×Vienna State Champion (Alpine Combination)
5 ×Vienna Youth Champion (2 ×Giant Slalom, 2 ×Super-G, 1 ×Combination)
2 ×Vienna Youth Cup Winner
1 ×Vienna State Cup Winner