

Ratmir Miftachov

Citizenship: German | contact@miftachov.com | Date of Birth: 17/02/1997

EDUCATION

Humboldt University of Berlin

PhD Candidate in Statistics

- Supervisor: Wolfgang Härdle

Berlin, Germany

May 2021 - expected: Mar. 2026

Princeton University

Visiting Researcher, ORFE Department

- Invited by Jianqing Fan

Princeton, United States

May 2023, Aug. - Dec. 2024

University College London

Visiting Researcher, Department of Computer Science

- Invited by Tomaso Aste

London, United Kingdom

Aug. 2023

University of Mannheim

Master of Science in Economics with Distinction

Mannheim, Germany

Sept. 2018 - Sept. 2020

University of Cologne

Bachelor of Science in Economics with Distinction

Cologne, Germany

Sept. 2015 - Febr. 2018

RESEARCH PROJECTS

Early Stopping for Regression Trees

Submitted

[\[paper\]](#)[\[slides\]](#)

- Proved theoretical guarantees for a novel data-driven early stopping rule for the regression tree. Demonstrated its ability to significantly reduce computational costs compared to state-of-the-art methods.

Early Stopping for Random Forest Classifier

Work-in-Progress

- Extended previous work to the random forest classifier. The early stopped forest is computationally efficient, has significantly fewer nodes, and its prediction performance is on par with the deeply grown forest.

EarlyStopping: Implicit Regularization for Iterative Learning Procedures in Python

Submitted

[\[paper\]](#)

- Implemented a Python library for early stopping techniques for different algorithms, including a gradient descent variant, conjugate gradient, tSVD, L2-boosting, and the regression tree.

Shapley Curves: A Smoothing Perspective

Published at Journal of Business and Economic Statistics

[\[paper\]](#)

- Derived minimax rates for nonparametric Shapley curves as a variable importance measure and established a novel wild bootstrap procedure for finite sample inference.

Risk-Premia in the Bitcoin Market

Submitted

[\[paper\]](#)

- Analyzed Bitcoin option data through the nonparametric pricing kernel and identified a different risk appetite compared to the S&P 500 based on a novel clustering algorithm.

TALKS

Workshop on Early Stopping (invited)

Institut Henri Poincaré

Paris, France

Mar. 2025

Statistics Lab Seminar (invited)

Princeton University

Princeton, United States

Oct. 2024

International Conference on Computational Statistics (invited)

University of London

London, United Kingdom

Aug. 2023

Conference Statistical Foundations of Data Science

Princeton University

Princeton, United States

May 2023

Conference Recent Advances in Statistics and Data Science

Rutgers University

Rutgers NJ, United States

May 2023

Conference Statistics of Machine Learning (invited)

Charles University

Prague, Czech Republic

Oct. 2022

AWARDS

PhD Scholarship of the German Academic Scholarship Foundation (Studienstiftung)

Merit-based Scholarship awarded to the top 0.5% of German students

Since 2023

- 4 years; approx. EUR 90,000

Dean's award for outstanding academic achievement

Awarded to the top 5% of 479 students in the Bachelor's program

2017

ACADEMIC WORK EXPERIENCE

Research Associate, Department of Mathematics

SFB 1294 'Nonlinear statistical inverse problems', HU Berlin

Aug. 2023 - Dec. 2025

Supervision Master's thesis

Mustafa Suman on 'Early Stopping for Random Forest Classifier' (together w/ Markus Reiß)

2024 (ongoing)

Teaching Assistant

'Statistical Learning and Data Science' (Master's level), HU Berlin

Spring, Fall 2022

Associated researcher, DeSBI

'Deep Learning and Statistics Towards Understanding Structured Biomedical Data', HU Berlin

Since Mar. 2023

Research Associate, Department of Economics

IRTG 1792 'High-dimensional nonstationary time series', HU Berlin

May 2021 - Feb. 2023

Research Intern, German Federal Bank

Department General Statistics

Frankfurt, Germany

Summer 2018

FREQUENTLY USED SKILLS

Languages: German (native), English, Russian

Software: Python, R, Matlab, Git

Mathematical statistics: likelihood inference, parametric and nonparametric regression (e.g. splines, kernel regression), experimental design, statistical hypothesis testing, bootstrap inference (finite and asymptotic), minimax theory, probability theory, time series estimation, GMM, basics of bayesian statistics (MCMC, variational inference)

Statistical learning: tree based algorithms (CART, bagged trees, random forest), boosting, classification (e.g. logistic regression, k-NN, SVM), causal inference (Rubin's causal model, Pearl's structural causal model), deep learning, cluster analysis, GANs, regularization techniques (e.g. LASSO, ridge, early stopping), dimensionality reduction (PCA, UMAP, LLE, *t*-SNE), LSTM, explainable ML (e.g. variable importance, SHAP)