Dr. Malte Winckler

Curriculum Vitæ

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Academical Education

2017–2020 **Dr. rer. nat. in Applied Mathematics**, *University of Duisburg-Essen*, Essen.
Predicate after oral examination: *Summa Cum Laude (with highest honors).*

Research focus: Optimization, Numerical and Computational Mathematics.

2015–2017 **Master of Science**, *University of Duisburg-Essen*, Essen, *Grade average: 1.1.*
Distinction: *ALMA*-Award for the best master thesis in mathematics.

2011–2015 **Bachelor of Science**, *University of Duisburg-Essen*, Essen, *Grade average 1.7.*

Vocational Experience

2023–today **Senior Data Scientist**, *JustEatTakeaway.com (Lieferando)*, Berlin.
Senior Data Scientist in the field of real-time automation of the internal courier fleet with a focus on ETA estimations and automated capacity management.

- Implementation of modern ML models for real-time computation (Kafka + Flink).
- Spearheading a novel optimization-focused approach to the capacity management of our courier fleet with automated decision making based on real-time forecasting.
- Development of a local-first experimentation infrastructure (deployment of infrastructure in Docker containers, automated Kafka Producers for augmented data).
- Coaching and supporting (Junior) Data Scientists with a combination of open communication, a margin for error and improvement, and a focus on continuous growth.

2021–2023 **Expert Data Scientist**, *Fressnapf Tiernahrungs GmbH*, Krefeld.
Main Data Scientist responsible for the development of various forecasting tools as well as for the further development of the Fressnapf GPS Tracker as a health device.

- Jack of all Trades: Realization of projects from data pipelines, through conceptualization and implementation of the machine learning model architecture, to a productive deployment accessible via cloud-based REST APIs and web front-ends.
- Implementing DevOps and MLOps practices: code versioning with Git, data and model versioning in Azure ML Stack, CI/CD with YAML, deployment in Docker containers.
- Scientific contact person for Boehringer-Ingelheim in a scientific study (GPS-Tracker).

2017–2021 **Research Assistant/PostDoc**, *University of Duisburg-Essen*.
Funded by a national third-party project within the German Research Foundation DFG Priority Programme SPP1962 focused on optimization (full time).

- Publication of 5+ research articles (peer-reviewed) in international top-tier journals.
- Peer reviewer for international journals (e.g. Springer Journal of Scientific Computing).
- Other scientific activities: Talks at international conferences, acquisition of funds, organization of own lectures, managing TAs, committee activities.

2016–2017 **Intern/Working Student**, *PricewaterhouseCoopers AG WPG*, Frankfurt am Main.
Worked in the area of Forensic Technology Solutions for 9 months.

IT Skills

Data Platform	Google BigQuery, Kafka, MongoDB, Apache Flink, Snowflake
Data Science	Classical Theory in Forecasting, Boosted Decision Trees, Causal Models, Neural Networks with Attention Mechanics. Implementation with NumPy, SciPy, Pandas, Scikit-Learn, Pytorch.
Dev/MLOps	Git, DVC, Docker, Github Actions, Kubernetes and Helm (a bit)
Frontend	Python Flask and Streamlit, HTML5, CSS, Javascript, Bootstrap.

Doctoral Thesis

Title	*Hyperbolic Maxwell Variational Inequalities in Type-II Superconductivity*
Advisor	Prof. Dr. Irwin Yousept
Referees	Prof. Dr. Michael Hintermüller, Prof. Dr. Fredi Tröltzsch.
Content	In my thesis, I have designed efficient algorithms for optimization problems in the area of computational electromagnetism. The techniques used in my projects such as gradient descent methods, Tikhonov regularization, and Huber loss have also found a way into the implementation of modern AI models.

Scientific Publications

2024 *Maurice Hensel, Malte Winckler, Irwin Yousept*: Numerical solutions to hyperbolic Maxwell quasi-variational inequalities in Bean-Kim model for type-II superconductivity, *ESAIM: Mathematical Modelling and Numerical Analysis*, [DOI].

2021 *Malte Winckler*: Hyperbolic Maxwell Variational Inequalities in Type-II superconductivity, *Doctoral Disseration, University of Duisburg-Essen*, [DOI].

2021 *S. Leyffer, P. Manns, M. Winckler*: Convergence of Sum-Up Rounding Schemes for Cloaking Problems governed by the Helmholtz equations, *Computational Optimization and Applications*, [DOI].

2021 *M. Winckler, I. Yousept*: Maxwell Variational Inequalities in Type-II Superconductivity, *Non-Smooth and Complementarity-Based Distributed Parameter Systems*, [DOI].

2021 *A. Laurain, M. Winckler, I. Yousept*: Shape optimization for superconductors governed by H(curl)-elliptic variational inequalities, *SIAM Journal on Control and Optimization*, [DOI].

2020 *M. Winckler, I. Yousept, J. Zou*: Adaptive edge element approximation for H(curl) elliptic variational inequalities of second kind, *SIAM Journal on Numerical Analysis*, [DOI].

2019 *M. Winckler, I. Yousept*: Fully discrete scheme for Bean's critical-state model with temperature effects in superconductivity, *SIAM Journal on Numerical Analysis*, [DOI].

2019 *L. Betz, M. Winckler, I. Yousept*: Supraleiter und Mathematik, *Unikate 53*, [DOI].

2018 *M. Winckler, I. Yousept*: Fully discrete solution for Bean's critical-state model in type-II superconductivity, *Proceedings in Applied Mathematics and Mechanics*, [DOI].

Extracurricular Activities

2019–2021 Chairman of the young researcher commitee, DFG SPP1962.
2014–2015 Chairman of the students council for mathematics.
2013–2014 Financial referent of the students council for mathematics.
2012–2013 Elected member of the students council for mathematics.

Language Skills

German (mother tongue), English (proficient), Spanish (very basic)

Personal Interests

Martial arts, Hiking/Backpacking Trips, Homelab