

# Robin M. Schmidt

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## RESEARCH AND WORK EXPERIENCE

### Max Planck Institute for Informatics & University of Tübingen

Aug 2020 – Present

Master Thesis in the Explainable Machine Learning Group of Prof. Dr. Zeynep Akata

[Python]

- Thesis Topic: Explainable Domain Generalization
- Developed Self-Challenging Activation Maps for Domain Generalization
- Supervised by Dr. Massimiliano Mancini, Prof. Dr. Zeynep Akata, and Prof. Dr. Philipp Hennig

### Max Planck Institute for Intelligent Systems & University of Tübingen

Oct 2019 – May 2020

Research Internship in the Methods of Machine Learning Group of Prof. Dr. Philipp Hennig

[Python]

- Benchmarked and compared 102 state-of-the-art Deep Learning optimizers and configurations
- Solved the problem of missing reference points for new optimization algorithms
- Enabled DeepOBS as a competitive benchmarking suite by creating new optimization baselines
- Took the initiative and advanced development of DeepOBS by fixing very impactful bugs
- Featured in Andrew Ng's "The Batch", grade for credit (german): **1.0** – best possible grade

### IBM Research & Development

Aug 2019 – Oct 2019

Extreme Blue Internship supervised by Martin Oberhofer and Dr. Manfred Oevers

[Python]

- Led a team of interns on research for master data management with internet of things use cases
- Developed more effective instance-level product master data representations through a RESTful API
- Developed a graph-based visualization based on React.js for a prototype in the healthcare sector
- Worked closely with offering management in the U.S. to deploy the new features
- Presented the results to different audience types during internal and external events, conferences, or exhibitions

### Cooperative State University Baden-Württemberg Stuttgart

Oct 2017 – Jun 2018

Research Internship supervised by Prof. Dr.-Ing. Olaf Herden

[Shell]

- Compared state-of-the-art NewSQL databases on the categories of the business readiness rating
- Provided heuristics for the appropriate NewSQL database selection
- Grade for credit (german): **1.5** – approximately equivalent to an "A" grade (UK)

### Eisenmann SE

Oct 2015 – Oct 2018

Research & Development Engineer (Co-op) + Bachelor Thesis

[Java]

- Quantified and implemented more effective key performance indicators for better performance insights
- Conceptualized and developed a highly cost-efficient single product tracking system
- Took the initiative to solve data collection problems on-premise in the USA regarding the available sensor data
- Published three papers on these topics under a non-disclosure agreement – see bibliography

## EDUCATION

University of Tübingen | M.Sc. – Computer Science

Oct 2018 – Present

Focus on Machine Learning – Current German grade: 1.38

strong first class honours equivalent (UK)

DHBW Stuttgart | B.Sc. – Computer Science

Oct 2015 – Oct 2018

Undergraduate education – German grade: 2.0

strong upper second class honours equivalent (UK)

## SKILLS

**Languages:** German (native), English (business fluent), Latin (small latinum certificate), Japanese (beginner)

**Programming:** Python, Java, C#, Prolog, Matlab, R, SQL, Gremlin, HTML5, CSS3, JavaScript

**Frameworks & Tools:** PyTorch, TensorFlow, Flask, Pandas, Git, Linux, Docker, Kubernetes, L<sup>A</sup>T<sub>E</sub>X

**Databases:** MySQL, Oracle, JanusGraph, MongoDB, VoltDB, NuoDB, CockroachDB

## SELECTED PROJECTS & CONTRIBUTIONS

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**DeepOBS:** Optimization Benchmarking Suite – Contributed Baselines, Scripts and improved Software Quality

**DomainBed:** Domain Generalization Benchmarking Suite – Contributed Algorithms and improved Software Quality

**Recommender Systems** : Analyzed *recourse* and *availability* under model uncertainty, discrepancy, and ambiguity

**Street Photography:** Samples of my side work – Selling metal, paper, or canvas prints of my street photography art

## UNPUBLISHED & INDUSTRY RESEARCH

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[Sch18a] **Robin M. Schmidt.** *Conception and Implementation of a Single Product Tracking System within a press hardening production line.* B.Sc. Thesis. (Title translated from German, subject to a NDA). 2018.

[Sch18b] **Robin M. Schmidt.** *Improvements for the configurable Data Analysis Pipeline within a Manufacturing Execution System.* (Title translated from German, subject to a NDA). 2018.

[Sch18c] **Robin M. Schmidt.** *New SQL Databases: An empirical evaluation of Open Source NewSQL databases regarding modern application scenarios.* (Title translated from German). 2018.

[Sch17] **Robin M. Schmidt.** *Calculation and Evaluation of Key Performance Indicators for production within a Manufacturing Execution System.* (Title translated from German, subject to a NDA). 2017.

## PREPRINTS

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[SH20] **Robin M. Schmidt** and Moritz Hahn. *Collaborative Filtering under Model Uncertainty.* 2020. arXiv: 2008.10117 [cs.LG].

[Sch19] **Robin M. Schmidt.** *Recurrent Neural Networks (RNNs): A gentle Introduction and Overview.* 2019. arXiv: 1912.05911 [cs.LG].

## PUBLICATIONS

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[SSH20] **Robin M. Schmidt**, Frank Schneider, and Philipp Hennig. *Descending through a Crowded Valley - Benchmarking Deep Learning Optimizers.* (under review). 2020. arXiv: 2007.01547 [cs.LG].