







Robin M. Schmidt

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Robin M. Schmidt 

EDUCATION

University of Tübingen

Master of Science in Computer Science

Mar 2021

Tübingen, Germany

- Cumulative GPA: 1.38/1.0 on a grading scale from 1.0 (best) to 5.0 (fail)
- Relevant Coursework: Data Mining & Probabilistic Reasoning, Advanced Computer Vision & Machine Learning, Advanced Deep Neural Networks, Advanced Perception Engineering

Cooperative State University Stuttgart

Bachelor of Science in Computer Science

Oct 2018

Horb, Germany

- Cumulative GPA: 2.0/1.0 on a grading scale from 1.0 (best) to 5.0 (fail)

WORK EXPERIENCE

IBM Research & Development

Software Engineer Intern (Backend)

Aug 2019 – Nov 2019

Böblingen, Germany

- Incorporated Internet of Things requirements into IBM's Master Data Management.
- Led project team and conceptualized more effective instance-level master data graph representations which opened up new use-case sectors and marketing opportunities.
- Developed a prototype with React.js, a Python RESTful API, and Cassandra & JanusGraph databases which allowed users to connect and visualize sensor data in real-time.
- ➡ Presented the results to the team's global head and wrote requested summary detailing value proposition and implementation details for senior leadership and offering management.

Eisenmann SE

Software Engineer (Backend)

Oct 2015 – Oct 2018

Böblingen, Germany

- Improved the configurable data analysis pipeline for the Manufacturing Execution System "E-MES" by analyzing different reporting-frameworks (e.g. JasperReports, BIRT, Pentaho, Tableau) and implementing them for convenient customer usage.
- Implemented better KPIs for improved performance insights of many customers by collecting customer requirements and providing reporting solutions via JasperReports.
- Conceptualized an uncertainty-based single product tracking system for a press-hardening production line with limited sensor data for an US customer.
- ➡ Took the initiative to solve under-specified sensor data collection problems on-premise in the USA, which was essential for the team to successfully complete the project on-time.

RESEARCH EXPERIENCE

Max Planck Institute for Informatics & University of Tübingen

Research Scientist in the Explainable Machine Learning Group

Aug 2020 – Present

Tübingen, Germany

- Research on Explainability-aided Domain Generalization for Image Classification that lead to state-of-the-art advancements on multiple generalization datasets.
- Developed two novel algorithms called Diversified Class Activation Maps (DivCAM) and Self-Challenging Attribute Prototype Networks (PRODROP).

Max Planck Institute for Intelligent Systems & University of Tübingen

Research Scientist Intern in the Methods of Machine Learning Group

Oct 2019 – May 2020

Tübingen, Germany

- Research on Stochastic Non-Convex Optimization that enabled the optimization benchmarking suite "DeepOBS" via open-sourced baselines of 50,000 individual training runs.
- Advanced development of "DeepOBS" by fixing and developing key features that included batch comparison scripts, analysis code, and multiple framework endpoints.
- ➡ Publication: "Descending through a Crowded Valley – Benchmarking Deep Learning Optimizers" under review at *International Conference on Machine Learning, ICML 2021*.
- ➡ Work featured twice in Andrew Ng's weekly machine learning newsletter "The Batch".

SKILLS

Concepts: Machine Learning, Deep Learning, Optimization, Domain Generalization

Programming: Python, Java, C++, Prolog, Matlab, R, JavaScript

Frameworks & Tools: PyTorch, TensorFlow, Flask, Pandas, Docker, Git, Linux, SQL, Gremlin, L^AT_EX


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

Languages: German (native), English (fluent), Japanese (beginner)

SELECTED PROJECTS & CONTRIBUTIONS

DeepOBS: Optimization Benchmarking Suite – Contributed baselines, scripts and improved software quality.

DomainBed: Domain Generalization Benchmarking Suite – Contributed algorithms and other features.

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

App2Night: Cross-platform mobile app to create, attend, and rate user-generated events in real time.

SiteScrawler: Web-App to provide users via email and online with relevant news articles based on their interests.

INVITED TALKS

KTH Royal Institute of Technology: *Stockholm, Sweden*

September 25th, 2020

IBM Extreme Blue Conference: *Cluj-Napoca, Romania*

September 3rd, 2019

PUBLICATIONS

[SSH21] **Robin M. Schmidt**, Frank Schneider, and Philipp Hennig. “Descending through a Crowded Valley – Benchmarking Deep Learning Optimizers”. In: *International Conference on Machine Learning, ICML*. (under review). 2021.

PREPRINTS

[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].

THESES

[Sch21] **Robin M. Schmidt**. *Explainability-aided Domain Generalization for Image Classification*. M.Sc. Thesis. (in progress). 2021.

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

UNPUBLISHED & INDUSTRY RESEARCH

[Sch18b] **Robin M. Schmidt**. *Improvements for the configurable Data Analysis Pipeline within a Manufacturing Execution System*. (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*. (subject to a NDA). 2017.

OTHER INTERESTS

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