






Robin M. Schmidt

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EXPERIENCE

Apple

AI/ML Resident

Jul 2021 – Jul 2022

Aachen, Germany

[Python, Bash]

- Member of the Machine Translation team that is responsible for translations across the Apple ecosystem (many billion words/day) including the translate app, Safari, and Siri translations.
- Improved and productionized multilingual machine translation models that boosted translation quality up to 7 BLEU across many language pairs and reduced the number of deployed models.
- Advanced the translation accuracy, inference time, and memory usage of the Transformer models by implementing novel architectures including non-autoregressive and knn-MT approaches.



Max Planck Society (MPI-IS & MPI-INF)

Machine Learning Researcher

Oct 2019 – Mar 2021

Tübingen, Germany

[Python, Bash]

- Advanced development of the “DeepOBS” framework by fixing and developing key features that included batch comparison scripts, analysis code, and multiple framework endpoints.
-  Published empirical analysis of 15 stochastic non-convex optimization methods on 8 problems resulting in 50,000 individual training runs at ICML 2021 (supervisor: *Philipp Hennig*).
-  Developed novel Domain Generalization methods for CNN-based image classification that led to state-of-the-art advancements on various generalization datasets (supervisor: *Zeynep Akata*).

IBM

Extreme Blue Technical Leadership Program (Backend)

Aug 2019 – Oct 2019

Böblingen, Germany

[Python, JS]

- Managed intern team and conceptualized more effective instance-level master data graph representations that opened up new use-case sectors for Internet of Things requirements.
- 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

[Java, JS]

- Improved the configurable data analysis pipeline for the Manufacturing Execution System “E-MES” by implementing better reporting-frameworks for convenient customer usage.
- Conceptualized and implemented an uncertainty-based single product tracking system that significantly improved transparency and insights for production lines with limited sensor data.
- 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.

EDUCATION

University of Tübingen, Germany

Master of Science (M. Sc.) in Computer Science

Oct 2018 – Mar 2021

GPA: 1.4/1.0 (German)

Cooperative State University Stuttgart, Germany

Bachelor of Science (B. Sc.) in Computer Science

Oct 2015 – Oct 2018

GPA: 2.0/1.0 (German)

PEER-REVIEWED PUBLICATIONS

- [SSH21] **Robin M. Schmidt**, Frank Schneider, and Philipp Hennig. “Descending through a Crowded Valley – Benchmarking Deep Learning Optimizers”. In: *Proceedings of the 38th International Conference on Machine Learning, ICML*. (acceptance rate: 21.4%). 2021, pp. 9367–9376.

SKILLS

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

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

Frameworks & Tools: PyTorch, TensorFlow, Fairseq, Faiss, Slurm, NumPy, Flask, Django, Pandas, Docker, Git, Linux, SQL, Gremlin, Matplotlib, HTML, CSS, Jira, Confluence, L^AT_EX.

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


Languages: German (*native*), English (*near native*), Japanese (*beginner*).

SELECTED OPEN-SOURCE PROJECTS & CONTRIBUTIONS

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

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

NL-Augmenter : NLP text transformations and dataset filters – Contributed two filters and code quality changes.

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 & POSTER SESSIONS

King's College London: *Virtual – Industry Insight* December 2nd, 2021

Apple AI/ML Machine Translation: *Virtual – Deep Learning Optimization* October 20th, 2021

International Conference on Machine Learning ‘21: *Virtual – Spotlight Optimization Paper* July 21st, 2021

KTH Royal Institute of Technology: *Virtual – Deep Learning Optimization* September 25th, 2020

IBM Extreme Blue Conference: *Cluj-Napoca, Romania – MDM Project* September 3rd, 2019

THESES

[Sch21] **Robin M. Schmidt.** *Explainability-aided Domain Generalization for Image Classification.* M. Sc. Thesis. 2021. arXiv: 2104.01742 [cs.LG].

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

PREPRINTS & TECHNICAL REPORTS

[Dho+21] Kaustubh D. Dhole et al. *NL-Augmenter: A Framework for Task-Sensitive Natural Language Augmentation.* 2021. arXiv: 2112.02721 [cs.CL].

[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].

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

OTHER INTERESTS & ACTIVITIES

Google Hash Code 2021: Organized a virtual hub and placed in the Top-15% of participating teams worldwide.

Academic Duties: Served as a reviewer for ML conferences such as ICLR 2022 or Apple ML Summit 2022.

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