Robin M. Schmidt

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Experience

Apple *Jul 2021 – Jul 2022*
AI/ML Resident *Aachen, Germany*
[Python]

- 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 of the serving models by developing and implementing novel architectures including `<UNDISCLOSED>` and `<UNDISCLOSED>` approaches.

Max Planck Society (MPI-IS & MPI-INF) *Oct 2019 – Mar 2021*
Machine Learning Researcher *Tübingen, Germany*
[Python]

- Developed multiple explainability-aided Domain Generalization methods for image classification that led to state-of-the-art advancements on various generalization datasets.
- Published analysis of 15 stochastic non-convex optimization methods on 8 problems using 4 different learning rate schedules resulting in 50,000 individual training runs at ICML 2021.
- Advanced development of the "DeepOBS" framework by fixing and developing key features that included batch comparison scripts, analysis code, and multiple framework endpoints.

IBM *Aug 2019 – Oct 2019*
Extreme Blue Technical Leadership Program (Backend) *Böblingen, Germany*
[Python]

- 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 *Oct 2015 – Oct 2018*
Software Engineer (Backend) *Böblingen, Germany*
[Java]

- 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 for a production line 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 *Oct 2018 – Mar 2021*
Master of Science (M. Sc.) in Computer Science **GPA: 1.4/1.0** (German)

Cooperative State University Stuttgart, Germany *Oct 2015 – Oct 2018*
Bachelor of Science (B. Sc.) in Computer Science **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, 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, LaTeX.

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

[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.