Christoph Alt

Researcher · Software Engineer

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Summary

I am a **researcher / software engineer** with 4+ years of experience (research and applied) in **machine learning** & **natural language processing** & **distributed computing**. Fluent in Python, Java, Python's scientific and machine learning stack, recent deep learning and natural language processing frameworks, Docker, and AWS. I am passionate about solving difficult problems with little data.

Experience

German Research Center for AI (DFKI) *Berlin*
Postdoctoral (Senior) Researcher *01.2021–(now)*

- Research in **low-resource information extraction** with limited (labeled) and continuously changing data.
- Specifically, I focus on self- and weakly-supervised pre-training for low-resource domains and long-tail classes, and memory- and language-model-augmented few- and zero-shot learning.

German Research Center for AI (DFKI) *Berlin*
Researcher and PhD Student *06.2017–12.2020*

- (Applied) research in **information extraction** with limited labeled data, **explainability**, and **dialogue systems**.
- I published and presented research at multiple top-tier conferences (e.g., ACL, EMNLP).
- I developed a dialogue system prototype that answers tens of millions of customer support requests per year.
- I developed an information extraction system that extracts thousands of supply-chain-related events (e.g., acquisitions) per day.

Zalando SE *Berlin*
Data Scientist (part-time) *11.2015–05.2017*

- As part of the **query understanding and intent** team my goal was to improve customer search experience.
- I was partly responsible for architecture and system design during the transition towards a more intelligent search.
- I developed a query **autocomplete and autosuggest** system to assist customers with their search, which, by now, serves tens of millions of customers every month.

Technical University of Berlin *Berlin*
Research Assistant *02.2016–04.2017*

- As a member of the Complex and Distributed IT Systems Group (CIT), I contributed to the design and development of "Exa", an experimental large scale **distributed machine learning** framework.
- I further implemented various distributed training strategies for commonly used machine learning algorithms.
- As a member of the Database Systems and Information Management Group (DIMA), I **contributed algorithms** to the **Apache Flink** machine learning library.

Education

Technical University of Berlin *Berlin*
Dr.-Ing. in Computer Science, Machine Learning *06.2017–01.2021*

- **PhD thesis:** "Neural Sequential Transfer Learning for Relation Extraction" (summa cum laude)
- **Supervisors:** Prof. Sebastian Möller, Prof. Hans Uszkoreit
- I explored neural **transfer learning** for **information extraction**, specifically relation extraction from text (RE).
- I improved upon state-of-the-art RE methods, and identified shortcomings of recent approaches and remaining challenges of the task.

Technical University of Berlin *Berlin*
M.Sc. in Computer Engineering *04.2014–05.2017*

- **Master thesis:** "Adaptive Consistency Management for Distributed Machine Learning"
- **Supervisors:** Prof. Odej Kao, Prof. Volker Markl
- I explored different approaches to speed up distributed training of commonly used machine learning algorithms.
- Courses on general **machine learning**, **scalable data mining**, **natural language processing**, and **computer vision**.

Munich University of Applied Sciences *Munich*
B.Eng. in Computer Engineering *10.2009–06.2013*

- Courses on **embedded systems** development, **digital image processing**, and **network architectures**.

Projects

RelEx A comprehensive suite of baseline and state-of-the-art neural relation extraction methods; based on AllenNLP.

REval A framework to develop and evaluate probing tasks, e.g., to diagnose linguistic features captured by neural relation extraction models; based on the SentEval toolkit.

tuna Distributed hyperparameter search for AllenNLP based on Ray. The core framework is part of AllenAI's allentune.

Skills

Programming Python (expert), Java (fluent), Rust (prior experience), SQL

Libraries PyTorch, TensorFlow, JAX, numpy, scikit-learn, pandas, AllenNLP, Spacy, StanfordNLP, etc.

Tools Docker, Elasticsearch, AWS, Apache Spark & Flink & Hadoop & Kafka & Lucene & Solr

Languages German, English, French

Publications

14. **Christoph Alt**, "Neural Sequential Transfer Learning for Relation Extraction", *Doctoral Thesis*, Technical University of Berlin, 2021. https://doi.org/10.14279/depositonce-11154
13. **Christoph Alt**, Aleksandra Gabryszak and Leonhard Hennig, "TACRED Revisited: A Thorough Evaluation of the TACRED Relation Extraction Task", *58th Annual Meeting of the Association for Computational Linguistics*, 1558–1569, 2020. https://www.aclweb.org/anthology/2020.acl-main.142
12. **Christoph Alt**, Aleksandra Gabryszak and Leonhard Hennig, "Probing Linguistic Features of Sentence-level Representations in Neural Relation Extraction", *58th Annual Meeting of the Association for Computational Linguistics*, 1534–1545, 2020. https://www.aclweb.org/anthology/2020.acl-main.140
11. David Harbecke and **Christoph Alt**, "Considering Likelihood in NLP Classification Explanations with Occlusion and Language Modeling", *58th Annual Meeting of the Association for Computational Linguistics: Student Research Workshop*, 111–117, 2020. https://www.aclweb.org/anthology/2020.acl-srw.16
10. Marc Hübner, **Christoph Alt**, Robert Schwarzenberg and Leonhard Hennig, "Defx at SemEval-2020 Task 6: Joint Extraction of Concepts and Relations for Definition Extraction", *Proceedings of the Fourteenth Workshop on Semantic Evaluation*, 704–709, 2020. https://www.aclweb.org/anthology/2020.semeval-1.92
9. Hanchu Zhang, Leonhard Hennig, **Christoph Alt**, Changjian Hu, Yao Meng and Chao Wang, "Bootstrapping Named Entity Recognition in E-Commerce with Positive Unlabeled Learning", *The 3rd Workshop on e-Commerce and NLP*, 1–6, 2020. https://www.aclweb.org/anthology/2020.ecnlp-1.1
8. **Christoph Alt**, Marc Hübner and Leonhard Hennig, "Fine-tuning Pre-Trained Transformer Language Models to Distantly Supervised Relation Extraction", *57th Annual Meeting of the Association for Computational Linguistics*, 1388–1398, 2019. https://www.aclweb.org/anthology/P19-1134
7. **Christoph Alt***, Marc Hübner* and Leonhard Hennig, "Improving Relation Extraction by Pre-trained Language Representations", *2019 Conference on Automated Knowledge Base Construction*, 1–18, 2019. https://openreview.net/forum?id=BJgrxbqp67
6. Robert Schwarzenberg, Marc Hübner, David Harbecke, **Christoph Alt** and Leonhard Hennig, "Layerwise Relevance Visualization in Convolutional Text Graph Classifiers", *13th Workshop on Graph-Based Methods for Natural Language Processing*, 58–62, 2019. https://www.aclweb.org/anthology/D19-5308
5. Yang Li, Qingliang Miao, Ji Geng, **Christoph Alt**, Robert Schwarzenberg, Leonhard Hennig, Changjian Hu and Feiyu Xu, "Question answering for technical customer support", *International Conference on Natural Language Processing and Chinese Computing*, *Information*, 10, 63, 2018.
4. Guoguang Zhao, Jianyu Zhao, Yang Li, **Christoph Alt**, Robert Schwarzenberg, Leonhard Hennig, Stefan Schaffer, Sven Schmeier, Changjian Hu and Feiyu Xu, "MOLI: Smart Conversation Agent for Mobile Customer Service", *Information*, 10, 2, 2018.
3. David Harbecke, Robert Schwarzenberg and **Christoph Alt**, "Learning Explanations from Language Data", *2018 EMNLP Workshop BlackboxNLP: Analyzing and Interpreting Neural Networks for NLP*, 316–318, 2018. https://www.aclweb.org/anthology/W18-5434
2. Roland Roller, **Christoph Alt**, Laura Seiffe and He Wang, "mEx - An Information Extraction Platform for German Medical Text", *11th International Conference on Semantic Web Applications and Tools for Healthcare and Life Sciences*
1. Tobias Herb, Tim Jungnickel and **Christoph Alt**, "Weak Consistency and Stochastic Environments: Harmonization of Replicated Machine Learning Models", *2nd Workshop on the Principles and Practice of Consistency for Distributed Data*, 8, 3, 2016. https://doi.org/10.1145/2911151.2911161