Caglar Demir

caglardemir8@gmail.com English, German, and Turkish German
+4915771674363 Personal website

Employment

2019 – · · · · **Research Fellow**, Data Science Group of Paderborn University
· Researching scalable algorithms for learning and reasoning on graph data
· Training and deploying large-scale embedding models
· Managing machine learning work packages in funded projects

2018 – 2019 **Software Developer**, Semalytix GmbH, Bielefeld
· Development and deployment of hierarchical user type classifier on Twitter
· Investigating multi-model learning & continual learning for user type classifiers

2014 – 2018 **Software Developer**, Devboards GmbH, Paderborn
· Development of a dynamic scheduler to program custom designed FPGAs
· Integrating FPGA Image classification module
· Automatic orchestration of UART interfaces

Education

2019 – · · · · **Ph.D. Computer Science**, Paderborn University

2016 – 2019 **M.Sc. Computer Science**, Paderborn University

2014 – 2016 **Language and Prerequisite Studies**, Paderborn University

2007 – 2013 **B.Eng. Computer Engineering**, five years long curriculum, Istanbul Halic University

Funded Projects

2020 – · · · · **Rapid Explainable AI for Industrial Facilities**
· Development of Inductive Logic Programming module for explainable predictions
· Designing a Deep Q-Network component within Inductive Logic Programming
· Communication with partners

Erklärbare Diagnostische KI für industrielle Daten
· Developing a scalable hardware-agnostic knowledge graph embedding framework
· Deployment of large-scale embedding models
· Communication with partners

Selected Recent Works

1. **Demir, Caglar**, H. A., Yushan, L., Alexander, B., Moussallem, Diego, & Ngomo, A.-C. N. (2022). Rapid explainability for skill description learning. *ISWC 2022*.

2. **Demir, Caglar**, Lienen, J., & Ngomo, A.-C. N. (2022). Kronecker decomposition for knowledge graph embeddings. In *Proceedings of the 33nd acm conference on hypertext and social media*.

3. **Demir, Caglar**, & Ngomo, A.-C. N. (2022a). Hardware-agnostic computation for large-scale knowledge graph embeddings. *Software Impacts Journal*.

4. **Demir, Caglar**, & Ngomo, A.-C. N. (2022b). Permutation-invariant description logic expression learning. *to appear at Web 2023*.

5. Heindorf, S., Blübaum, L., Düsterhus, N., Werner, T., Golani, V. N., **Demir, Caglar**, & Ngomo, A.-C. N. (2022). Evolearner: Learning description logics with evolutionary algorithms. *The Web Conference 2022*. Retrieved from https://arxiv.org/abs/2111.04879

6. Kouagou, N., Heindorf, S., **Demir, Caglar**, & Ngomo, A.-C. N. (2022). Learning concept lengths accelerates concept learning in alc. *ESWC 2022*. Retrieved from https://arxiv.org/abs/2107.04911

7. Lienen, J., **Demir, Caglar**, & Hüllermeier, E. (2022). Conformal credal self-supervised learning. *ICML Workshop on Distribution-Free Uncertainty Quantification*. Retrieved from https://arxiv.org/abs/2205.15239

8. **Demir, Caglar**, Moussallem, D., Heindorf, S., & Ngonga Ngomo, A.-C. (2021). Convolutional hypercomplex embeddings for link prediction. *ACML 2022*, *157*, 656–671. Retrieved from https://proceedings.mlr.press/v157/demir21a.html

9. **Demir, Caglar**, Moussallem, D., & Ngomo, A. (2021). Shallow neural model for relation prediction, 179–182. Retrieved from https://ieeexplore.ieee.org/abstract/document/9364482

10. **Demir, Caglar**, & Ngomo, A.-C. N. (2021a). Convolutional complex knowledge graph embeddings. *ESWC 2021*, 409–424. Retrieved from https://link.springer.com/chapter/10.1007/978-3-030-77385-4_24

11. **Demir, Caglar**, & Ngomo, A.-C. N. (2021b). Drill–deep reinforcement learning for refinement operators in alc. *Appeared in AAAI'21*. Retrieved from https://arxiv.org/abs/2106.15373

12. **Demir, Caglar**, & Ngomo, A.-C. N. (2020). A physical embedding model for knowledge graphs. In X. Wang, F. A. Lisi, G. Xiao, & E. Botoeva (Eds.), *Semantic technology*, Cham: Springer International Publishing. Retrieved from https://link.springer.com/chapter/10.1007/978-3-030-41407-8_13

Miscellaneous

Certificates	Data Scientist Nanodegree, AWS ML Nanodegree, Stanford Statistical Learning, and Coursera ML
Open-source Projects	DICE Embeddings: Hardware-agnostic Framework for Large-scale KGEs Ontolearn: Description Logic Expression Learning in Python Fundamentals: Algorithms from Scratch
Software Stack	Python, Pytorch, Numpy, Sklearn, Pandas, Distributed Computing, Docker, and Linux
References	Available on a request