Chair of Explainable AI-Based Business Information Systems
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Bachelor's Thesis: Systematic Literature Review on Machine Learning Applications in Small- and Medium-Sized Enterprises

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Start date: At the next possible date

Motivation and Goals

The application of Machine Learning (ML) methods allows companies to create business value in different ways, i. e. by creating knowledge, augmenting tasks, or by introducing autonomous agents, such as customer service chatbots (Shollo et al., 2022). However, companies are faced with different prerequisites that must be fulfilled in order to exploit the full potential of ML (Shollo et al., 2022). These prerequisites are not only linked to the companies' capabilities but also arise from the firms' environment (Shollo et al., 2022). Compared to larger companies, Small- and Medium-Sized Enterprises (SMEs) often lack capabilities necessary for adopting and developing Artificial Intelligence (AI) solutions (OECD, 2021). Thus, the question arises to which ML methods appear to be most suitable for SMEs and why.

Building on this, the goal of the thesis is to review the current state of the art concerning ML applications in SMEs, identify research gaps, and derive recommendations for both research and industry on how SMEs can successfully incorporate ML solutions in their business.

Required Skills

- Strong interest in AI and ML methods
- Good English skills
- Ideally already prior experience in conducting Systematic Literature Reviews

Starting Literature (Topic)

Shollo et al. (2022). Shifting ML value creation mechanisms: A process model of ML value creation. *The Journal of Strategic Information Systems*, 31, 101734. https://doi.org/10.1016/j.jsis.2022.101734

OECD (2021). The Digital Transformation of SMEs. *OECD Studies on SMEs and Entrepreneurship*, OECD Publishing, Paris. https://doi.org/10.1787/bdb9256a-en

Bauer, M., van Dinther, C., & Kiefer, D. (2020). Machine Learning in SME: An Empirical Study on Enablers and Success Factors. *AMCIS 2020 Proceedings*. 3, 1–10. https://aisel.aisnet.org/amcis2020/adv_info_systems_research/adv_info_systems_research/3

Lins et al. (2021). Artificial Intelligence as a Service: Classification and Research Directions. *Business & Information Systems Engineering*, 63(4), 441–456. https://doi.org/10.1007/s12599-021-00708-w

Starting Literature (Method)

Vom Brocke et al. (2009). Reconstructing the Giant: On the Importance of Rigour in Documenting the Literature Search Process. *ECIS 2009 Proceedings. 161*. https://aisel.aisnet.org/ecis2009/161

Webster, J., & Watson, R. T. (2002). Analyzing the Past to Prepare for the Future: Writing a Literature Review. *MIS Quarterly*, 26(2), xiii–xxiii. https://www.jstor.org/stable/4132319