



Abschlussvortrag Masterarbeit Michael Fiify Kwarkyi

„Model Driven Development of Multi-Agent Systems: A Systematic Literature Review“

Context: Software engineering, like the design and implementation of complex distributed systems, is a domain where Multi-Agent Systems (MAS) and Model-Driven Development (MDD) are very important. The goal of this systematic literature review is to examine the current state of MAS and MDD research, and to answer our main research question: “What are the main research findings and trends in MAS and MDD literature”? This would give very good overview of best practices of the field, Trends, and their Challenges.

Methods: We conducted this systematic literature review using the PRISMA 2020 guidelines. We based the study selection on the title of the papers, abstract and full-text review.

Results: We assessed Model-Driven Development (MDD) strategies for Multi-Agent Systems (MAS) by focusing on six important research issues. We compared several approaches, finding advantages, disadvantages, trends, and gaps. We evaluated the ways in which MDD approaches control agent behavior and interactions, emphasizing problems and workable solutions. Significant shortcomings in interoperability and flexibility were noted, along with recommendations for further study. Some of the notable common themes are increasing tool support and standardizing processes, with a focus on scalability and adaptability. The results offer in-depth analysis of MDD for MAS, emphasizing potential areas for advancement and future research.

Conclusion: This review provides practical guidance and new perspectives to MAS and MDD research. That demonstrates how popular it is becoming and all the different potential uses for it in software engineering. The results support the necessity of further research on creative approaches and practical applications in designing and developing systems. There is a growing worry about the decreasing quality of research. However, because research methods vary widely and there may be biases in what gets published, it is difficult to fully understand or address the impact of this decline. We argue that future research needs to begin filling these gaps and further development of MAS and MDD approaches and tools for practical environments is still required.

Betreuer der Arbeit: Prof. Dr. Jörg P. Müller (Institut für Informatik), PD Dr. Christoph Knieke

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