

## **Abstract**

Kurzer Abstract in Deutsch in mindestens 500 Wörter.

Optional short abstract in English

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# **1 Introduction**

introduce this thesis

## **2 Background on Formal Languages**

Chapter on necessary preliminaries of formal languages

### **3 Background on Reinforcement Learning**

Chapter on the necessary preliminaries on reinforcement learning

## 4 Reward Machines

Chapter on application of formal languages and reinforcement learning: reward machines

[\[1\]](#) [\[2\]](#) [\[3\]](#)

## 5 Conclusion & Outlook

Conclusive remarks and outlook

## Appendix

experiments and code go here



## References

- [1] Rodrigo Toro Icarte et al. “Using Reward Machines for High-Level Task Specification and Decomposition in Reinforcement Learning”. In: *Proceedings of the 35th International Conference on Machine Learning (ICML)*. 2018, pp. 2112–2121. URL: <http://proceedings.mlr.press/v80/icarte18a.html>.
- [2] Alberto Camacho et al. “LTL and Beyond: Formal Languages for Reward Function Specification in Reinforcement Learning”. In: *Proceedings of the 28th International Joint Conference on Artificial Intelligence (IJCAI)*. 2019, pp. 6065–6073. URL: <https://www.ijcai.org/proceedings/2019/0840.pdf>.
- [3] Rodrigo Toro Icarte et al. “Reward Machines: Exploiting Reward Function Structure in Reinforcement Learning”. In: *Journal of Artificial Intelligence Research (JAIR)* 73 (2022), pp. 173–208. URL: <https://doi.org/10.1613/jair.1.12440>.