

Power Kite Control using Reinforcement learning

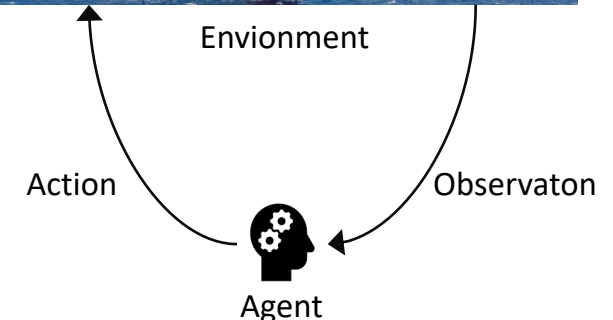
Projektseminar (2-3 Personen, Homeoffice)

Power kites are airborne wind energy systems that can be used to tow objects, such as vessels, or to generate electrical energy. Two main advantages of kites vs. traditional wind energy systems are lower material costs and the ability to operate at high altitudes, where the wind is generally stronger and more consistent. Thus, this technology has the potential to generate renewable energy at low costs.

A major challenge of this technology is that it requires an automated control system that harnesses as much wind power as possible and is robust to unforeseen disturbances. Existing control systems are based on heuristic guidance mechanisms, with a shift towards model predictive controllers in recent literature. The aim of this project seminar is to explore the suitability of Reinforcement Learning for this control task.

Your goal is to conduct a brief literature search on existing Reinforcement Learning methods for this or comparable systems. Then, you should define your own experimental setup and determine learning methods you want to apply. Furthermore, you should design and evaluate different reward functions specifically tailored for this application.

The preferred language for this project is English. The implementation should be done in Python. Therefore, some programming experiences are required. A basic knowledge of machine learning methods, especially reinforcement learning, can also be beneficial. For further questions feel free to contact us.



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