

Announcement for Bachelor Thesis/Research project

Reinforcement learning in automatic control of a reactor

Motivation

Reinforcement learning is a strongly emerging approach to automatic control of complex systems with often multiple control inputs. Different architectures of agents and different algorithms are more or less suitable for a specific task and a major challenge is the right choice of approach.

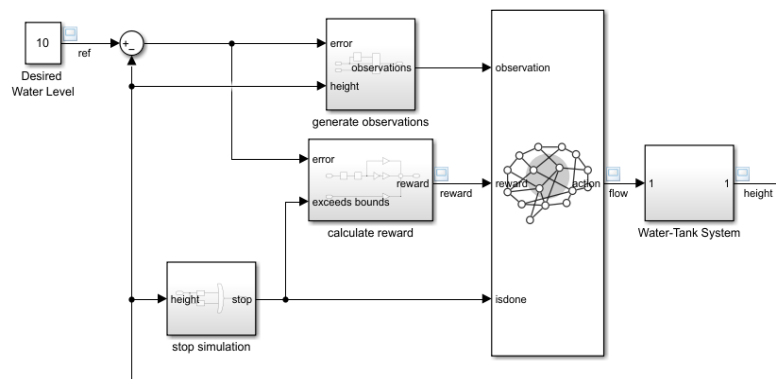


Figure 1: Structure of agent with environment in Simulink [1].

Task description

In this task, a simple chemical reactor model is given and will be extended in complexity by adding heat exchange to surroundings and disturbances e.g. leakage or changing ambient temperature. The model is now used as environment for reinforcement learning agents. Different agents are to be tested and compared in efficiency and suitability of control of the plant. The results of the research project should provide a controller that is suitable of driving the reactor in a preferred operation point in changing conditions.

Requirements

Solid understanding of Matlab/Simulink and automatic control is required and first experiences with neural networks and reinforcement learning is of advantage.

References

[1] <https://www.mathworks.com/help/reinforcement-learning/ug/create-simulink-environment-and-train-agent.html>

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