

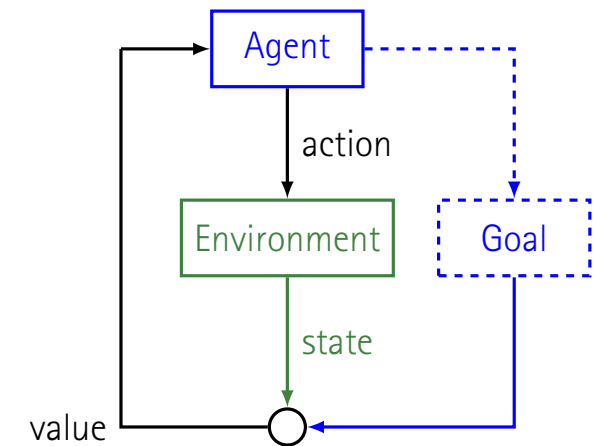
Bachelor-/Masterthesis Reinforcement Learning for Control

The classical design of optimal controllers requires full knowledge of the mathematical model of the system. Reinforcement learning (RL) is a strategy that allows an agent to learn an optimal controller using only its experience as it interacts with its environment. For example, the agent can execute an arbitrary action, observe how the environment responds, and compare such response with the agent's objectives. Behaviors that yield beneficial results are reinforced. Since the agent learns from experience, no knowledge of its model is needed.

The design of data- and learning-based controllers is currently a very active area of research. However, in comparison with other model-free methods, RL has been shown to be a highly efficient learning strategy. It is of interest to continue this line of research, by developing and analyzing novel RL algorithms that improve the characteristics of current state-of-the-art methods.

Related Bachelor-/Masterthesis topics include extending the current RL methods to design output-feedback optimal controllers, developing robust-control learning schemes and performing application-oriented comparisons between RL and other learning- or data-based controllers.

Interested students must have knowledge on the design of model-based optimal controllers for linear systems. Knowledge on artificial intelligence or machine learning topics is advantageous.



Contact

Dr. Victor G. Lopez
Institute of Automatic Control (IRT)
Room A035, Appelstr. 11
E-Mail: lopez@irt.uni-hannover.de
Tel.: +49-511-762-12172