

Energy Management in Smart Grids Using Finite Horizon SOR Q-learning

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The smart grid is comprised of different microgrids and is supported by different technologies. The microgrid has to make a lot of decisions, and this has to be automated for efficiency. We have Markov Decision Processes as a framework for sequential decision-making under uncertainty and reinforcement learning techniques to learn the optimal decisions. In this work, we formulate this problem in the setting of finite horizon Markov Decision Processes and propose two algorithms. One is a typical finite horizon algorithm similar to [1], and the other is an improvement of this algorithm using the technique of successive over relaxation. This is then applied to the smart grid problem.

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