Play with me: Practical Autocurriculum Deep Reinforcement Learning for Resilient Operation of Cyber-Physical Energy Systems

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Learning agents, i.e., software systems based on Deep Reinforcement Learning, have already firmly established themselves in a multitude of applications for smart grids. They promise to provide resilient strategies for the operation of power grids, being able to adapt themselves and react to events that were not foreseen by their creators. DRL agents need to be trained in simulations; the more extensive, the better. In order to learn faster and to avoid the sampling bias problem, autocurriculum setups, i.e., agents training against each other, have been introduced. This tutorial will provide a practical introduction to deep reinforcement learning with a special focus on autocurriculum setups. It will showcase an experiment considering voltage control in a realistic grid, introducing a comprehensive simulation and experimentation framework as one way to approach the topic.