

Multi-Agent Reinforcement Learning for Power Grid Topology Optimization

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Recent challenges in operating power networks arise from increasing energy demands and unpredictable renewable sources like wind and solar. While reinforcement learning (RL) shows promise in managing these networks, through topological actions like bus and line switching, efficiently handling large action spaces as networks grow is crucial. In this talk we present a hierarchical multi-agent reinforcement learning (MARL) framework tailored for these expansive action spaces, leveraging the power grid's inherent hierarchical nature. Experimental results indicate the MARL framework's competitive performance with single-agent RL methods. We also compare different RL algorithms for lower-level agents alongside different policies for higher-order agents.

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