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【547】Variational quantum policies for reinforcement learning

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Deep neural networks have had a profound impact on the field of reinforcement learning by achieving unprecedented performance in challenging decision-making tasks. Almost in parallel, the idea that variational quantum circuits could be used in quantum-classical machine learning systems started gaining increasing traction. Such hybrid systems have already shown the potential to tackle real-world tasks in supervised and generative learning, and recent works have established their provable advantages in artificial tasks. Yet, in the case of reinforcement learning, which is arguably most challenging, no proposal has been successful in solving standard benchmarking problems, nor has the potential of hybrid models been made clear. In this work, we resolve both questions.

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