

EXPLORATORY COMBINATORIAL OPTIMIZATION WITH REINFORCEMENT LEARNING



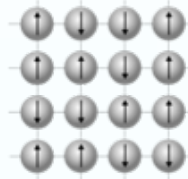
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- Combinatorial optimization: find the optimal configuration of a discrete, finite set.

Applications include...

- Quantum state optimization
- Protein folding
- Portfolio optimization



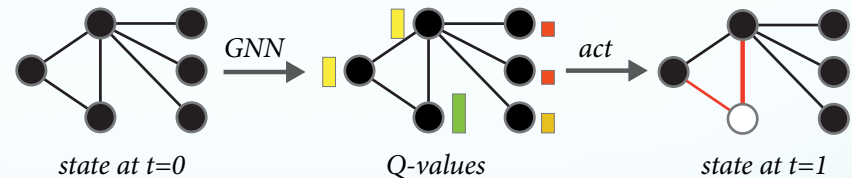
In computer science...

- Travelling salesman
- Minimum vertex cover
- Maximum cut



- RL framework for CO (Khalil et al., 2018)...

- Combined graph NN and Q-learning to incrementally construct a solution.



- This work (ECO-DQN): Instead of learning to construct a single good solution, **learn to explore for improving solutions.**

See poster/paper/me for details on...

- SOTA RL performance on Max-Cut.
- Motivating effective exploration.
- Generalisation to unseen graphs.
- Leveraging variance for improved performance.