

Quantum Approach to Yao's Minimax Principle: a Proposal

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Abstract

In this note the author proposes a quantum approach to the minimax formulation of the expected cost of randomized algorithms.

Consider the quantum algorithm developed for the MaxSAT problem in [1]. Next consider that the expected cost of randomized algorithms can be posed as a minimax problem (as done by Yao: see Section 2.1 in [2]). Minimax problems, via QUBO can be formulated as MaxSAT problems, thereby giving a quantum approach to the Yao formulation of randomized complexity.

References

- [1] Aman Chawla. Large language model-guided quantum maxsat algorithm design. February 2025. Zenodo Preprint. DOI:10.5281/zenodo.14876383.
- [2] Andrew Chi-Chin Yao. Probabilistic computations: Toward a unified measure of complexity. In *18th Annual Symposium on Foundations of Computer Science (sfcs 1977)*, pages 222–227. IEEE Computer Society, 1977.