

Key Principles and Architectures of Hybrid Adaptive Learning Systems Using Emerging Technologies

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Hybrid System

Hybrid systems that integrate both quantum and classical computing power offer an efficient solution for resource utilization in performing various tasks, with each component handling the operations it is best suited for, leveraging the strengths of each paradigm.

This collaborative model based on division of labor provides an optimal approach to problem-solving and ensures a balanced use of computational resources, enhancing performance and scalability [1,2].

Emerging Technology

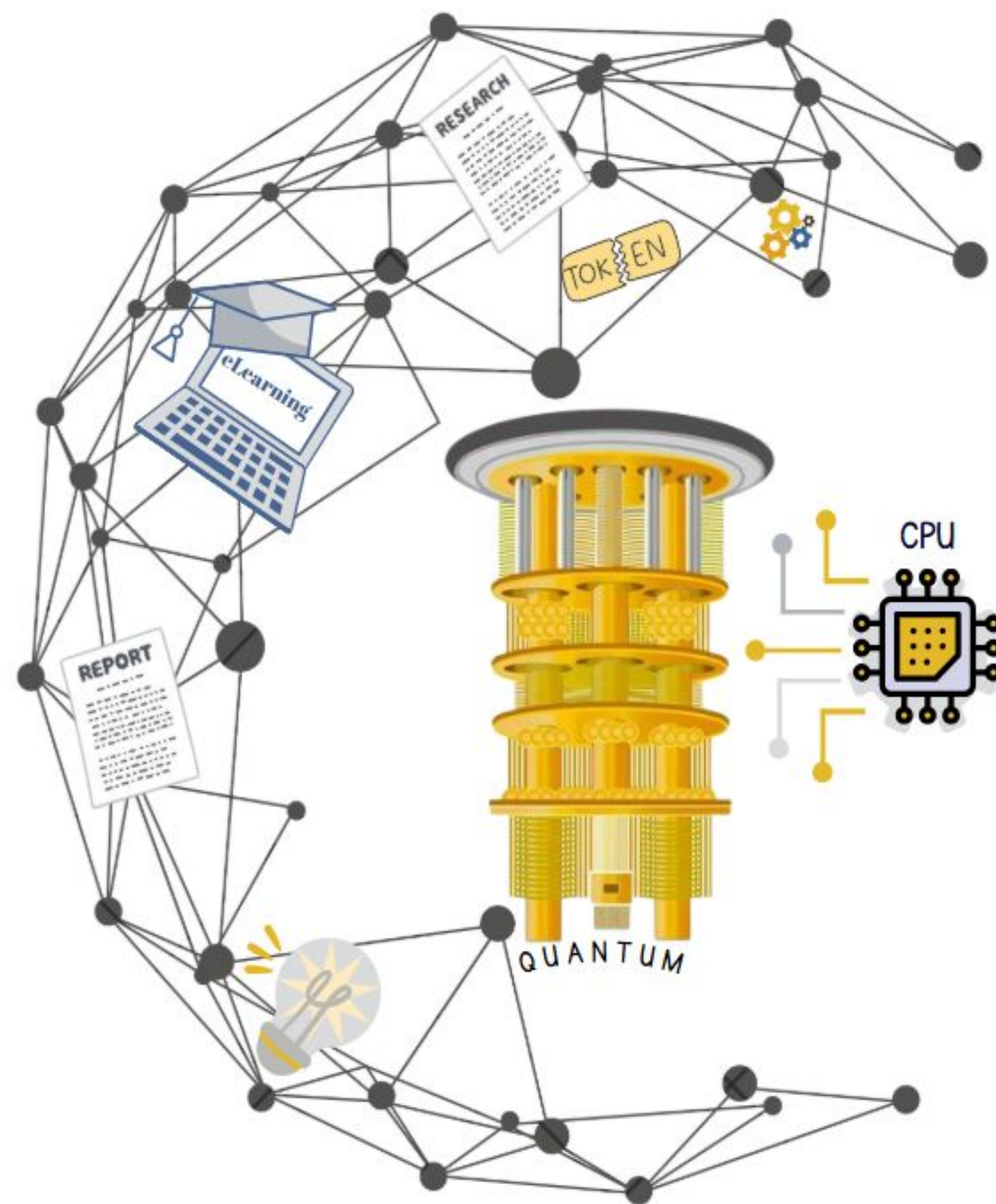
The Quantum computing component, as one of the most interesting emerging technologies, offers many advantages that promise to redefine standards in various fields. One of the most well-known benefits offered by quantum technology is its ability to compute at incredibly fast rates.

The proposed hybrid application, which integrates emerging technologies into adaptive learning systems, contributes to responsible computing and supports a valuable and efficient educational process.

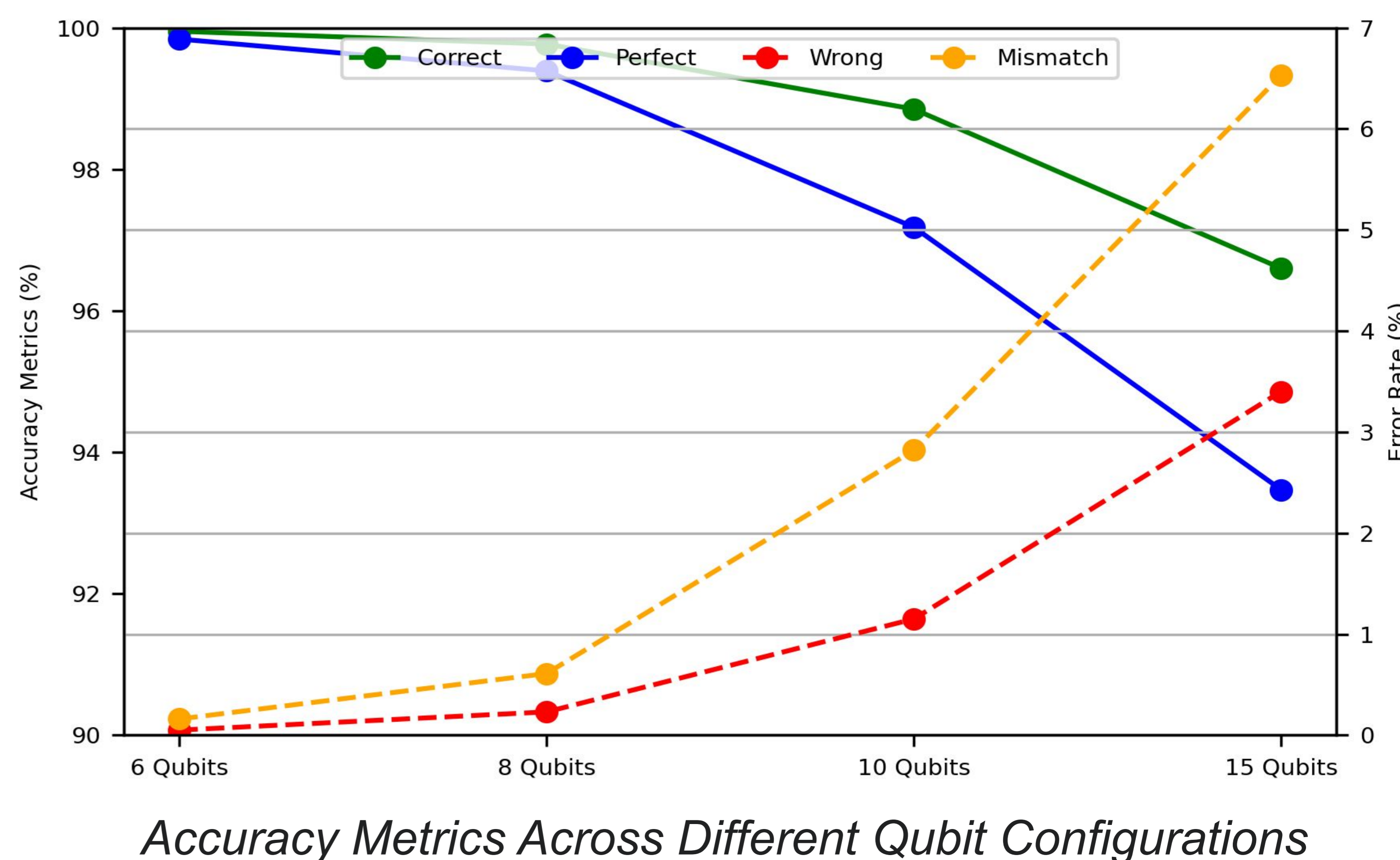
Our work is based on the hybrid quantum-classical paradigm and proposes a recommender system that uses classical text preprocessing techniques and quantum methods for calculating the semantic similarity score.

Quantum-Classical Synergy

The division of tasks leverages the strengths of both computational approaches, enabling scalable and efficient content recommendation in e-learning environments.



In an alternative perspective, the role of quantum computers is not to be a replacement for traditional systems but rather to complement them because they can be useful for certain jobs.



References

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1. Frank Phillipson, Niels Neumann, Robert Wezeman, 2022. Classification of Hybrid Quantum-Classical Computing
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12th ACM Celebration of Women in Computing: womENCourage™
Braşov, Romania
17-19 September, 2025
Theme: Computer Science: a Catalyst for Educational Change

