ALMA MATER STUDIORUM · UNIVERSITY OF BOLOGNA

School of Science
Department of Computer Science and Engineering
Master's Degree in Computer Science

Clustering aggregation on a neutral atom quantum computer

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Abstract

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Acknowledgements

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Chapter 1

Background

1.1 Clustering

Clustering is an unsupervised data analysis technique that can be informally defined as the partitioning of a set of objects into groups called clusters; such partitioning must ensure that objects within a same cluster are more similar[1] to each other than to objects in other clusters. [2]

Clustering is widely employed in numerous scenarios that require to group together similar data points, or to extract knowledge from a set of objects in the absence of any prior information. For instance, it is used in marketing and finance as a profiling tool; in image processing and computer vision, as a segmentation technique [1], where it plays a pivotal role in various fields, such as remote image sensing [4] and digital forensics [3]; by energy distribution companies, to optimize the allocation of resources to end users.

1.2 Basics of quantum computing

1.3 Quantum annealing

1.4 Neutral atoms technology

[1] Provided that a binary ordering relation is defined on the set of objects.

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Bibliography

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