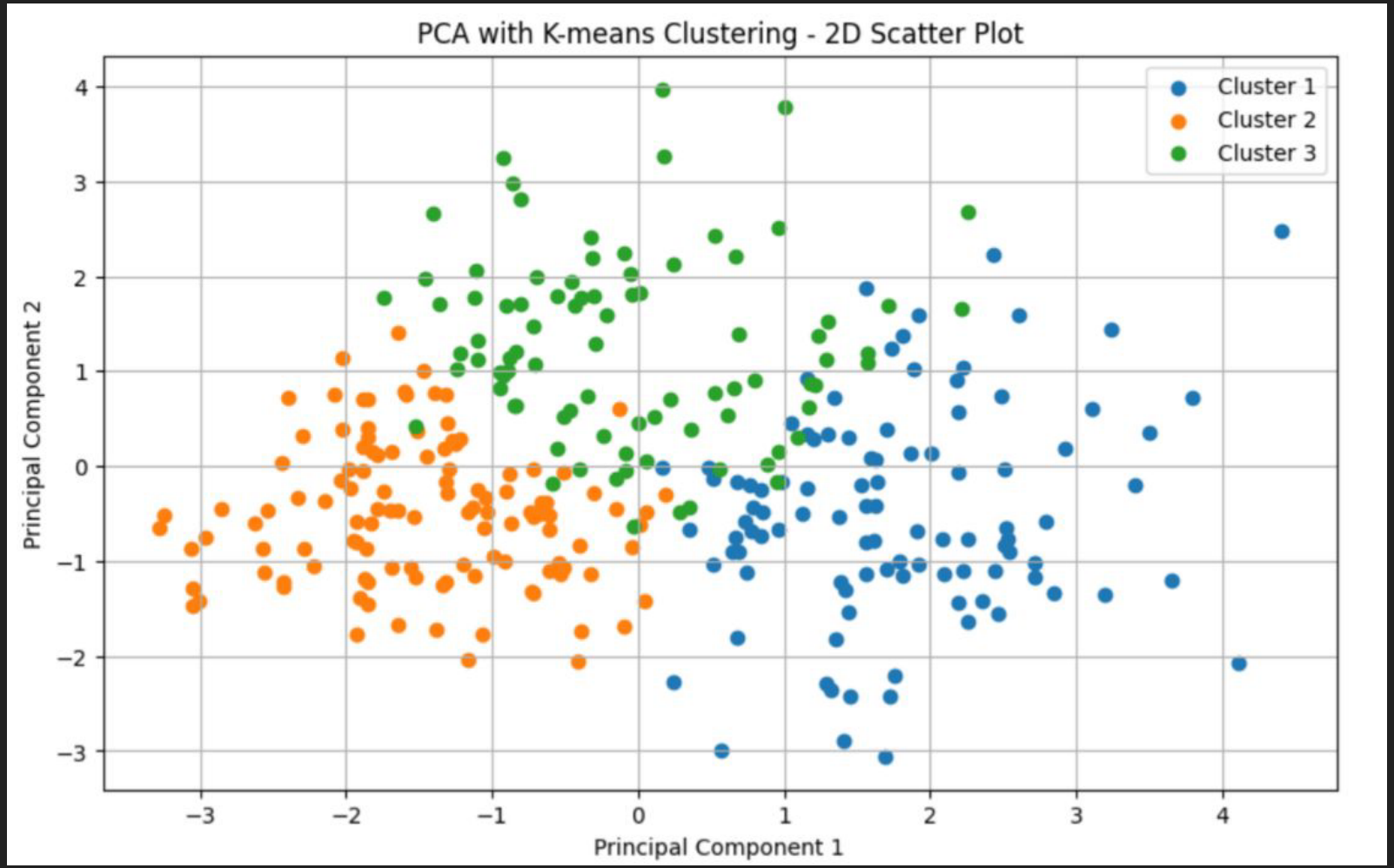
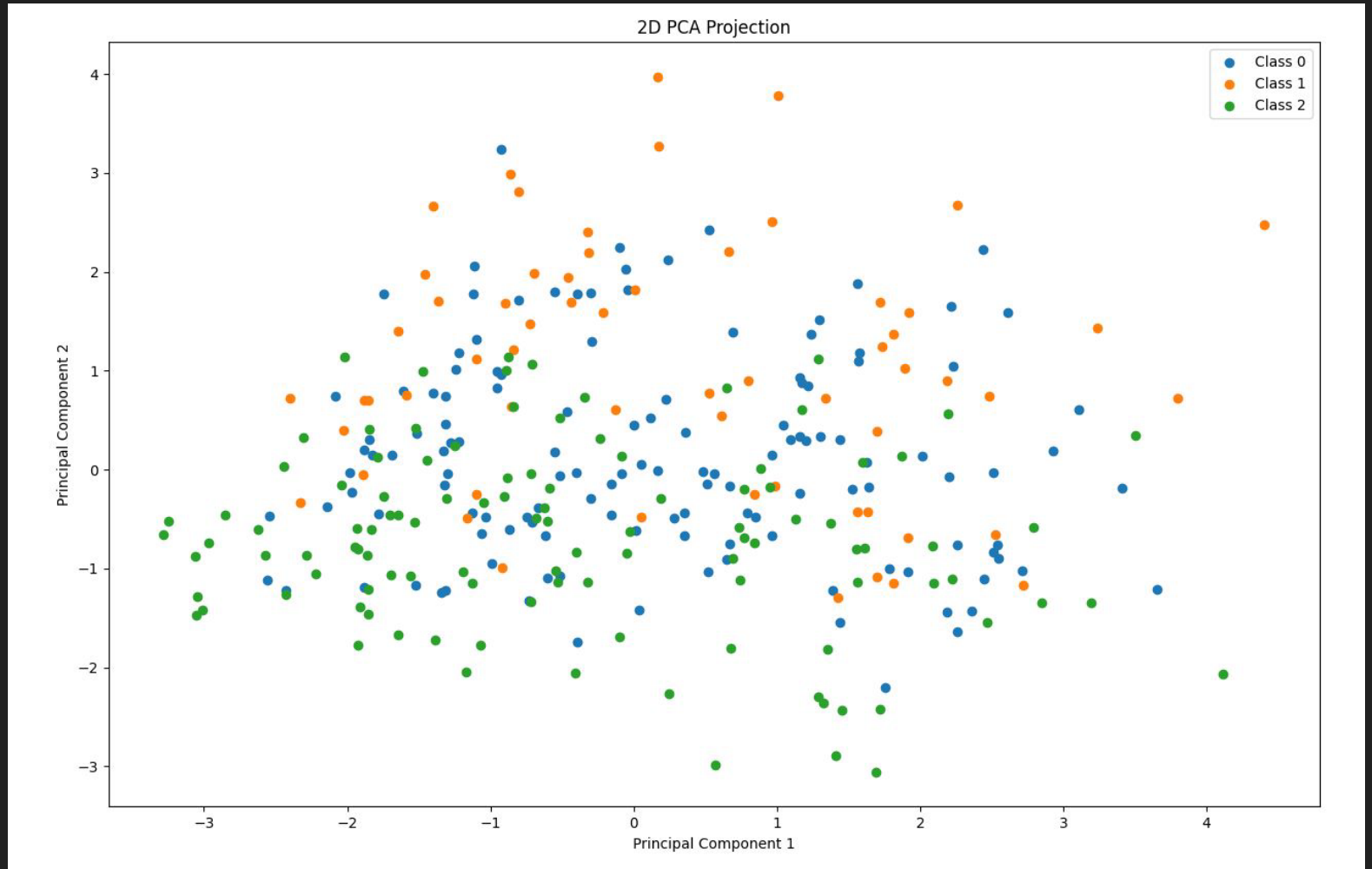
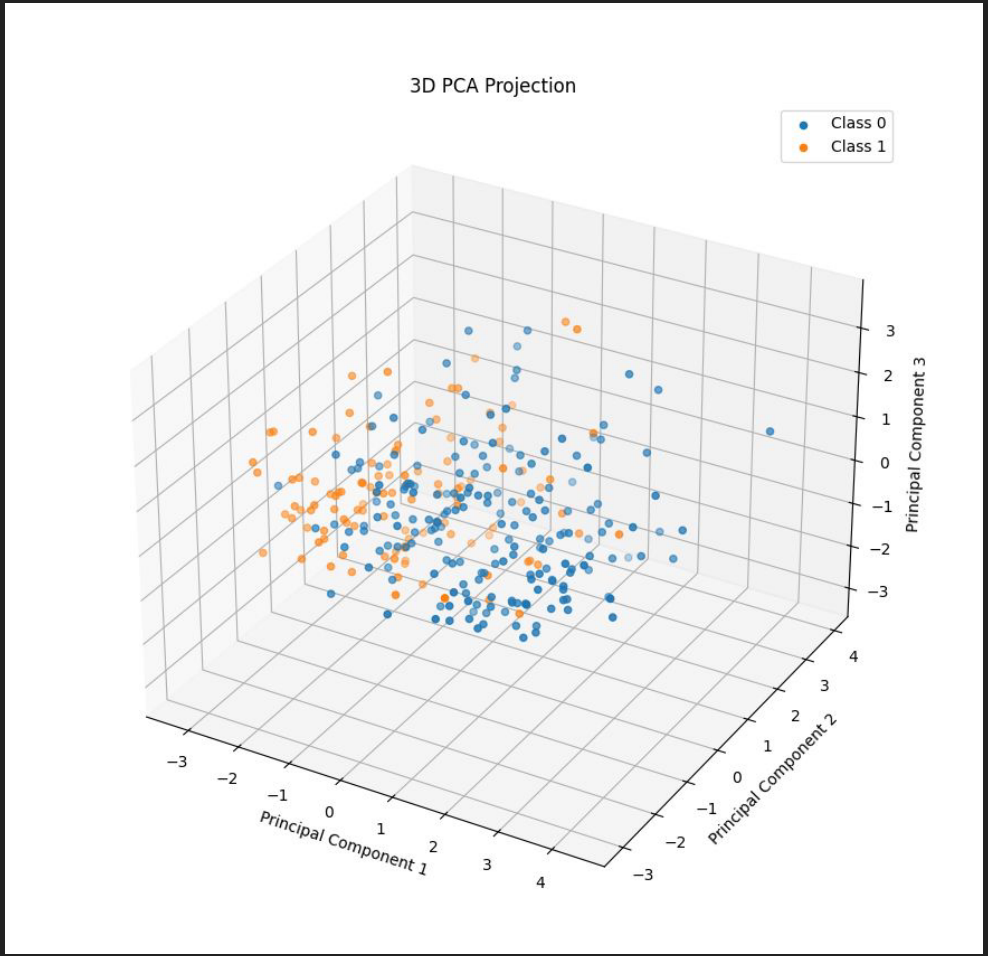
#5 Diagnosis detection


PCA with K-means Clustering - 2D Scatter Plot
Cluster 1
Cluster 2
Cluster 3
Principal Component 2
Principal Component 1
4
3
2
1
0
−1
−2
−3
−3
−2
−1
0
1
2
3
4

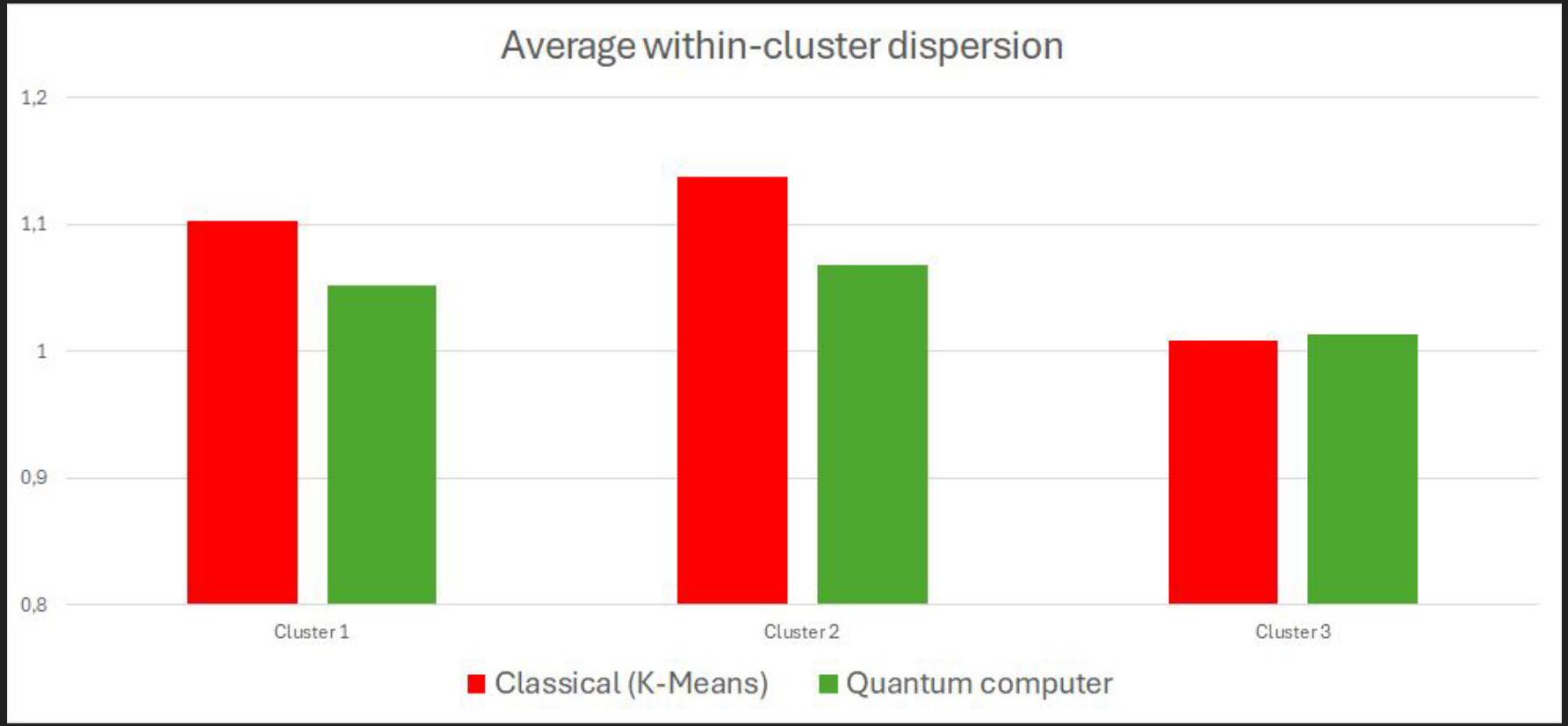

2D PCA Projection
Class 0
Class 1
Class 2
Principal Component 2
Principal Component 1
4
3
2
1
0
−1
−2
−3
−3
−2
−1
0
1
2
3
4


3D PCA Projection
Class 0
Class 1
Principal Component 1
Principal Component 2
Principal Component 3
−3
−2
−1
0
1
2
3
4

Clustering Quality (Silhouette) Comparison

Classical k-means	Quantum
< 0.19	~ 0.25
(no structure)	(possible weak structure)

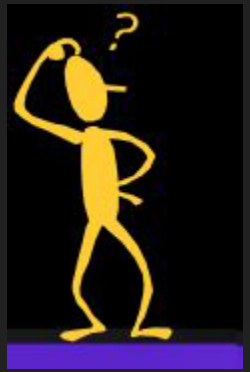
Algorithms comparison (lower = better)



Is Quantum Better for our approach?

We need to conduct further research to clarify the findings.

Additional studies will help provide a more definitive understanding.



Solutions to the encountered problem

Curse of Dimensionality: High-dimensional data can lead to sparsity and require exponentially more data, complicating analysis.

MORE Data: Increasing the volume of data can improve the reliability and accuracy of analyses.

Less Dimension: Fewer dimensions simplify the dataset, making analysis easier and more efficient.

Q&A

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