

Reproduction of Figure 1, 2, 3 with XXZ-Heisenberg Dataset

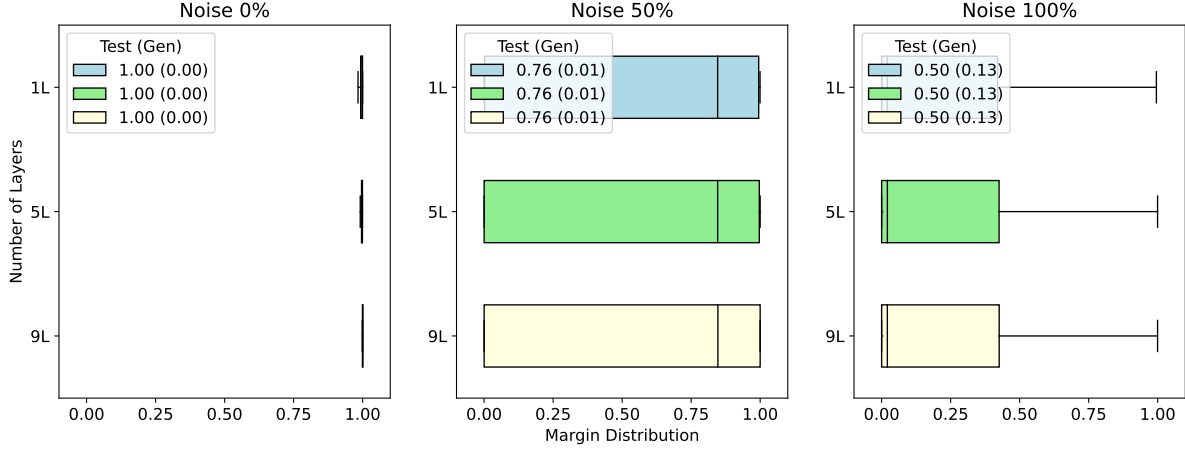


Figure 1: A Tukey box-and-whisker plot depicting the margin distributions of optimized 8-qubit Quantum Convolutional Neural Networks (QCNNs).

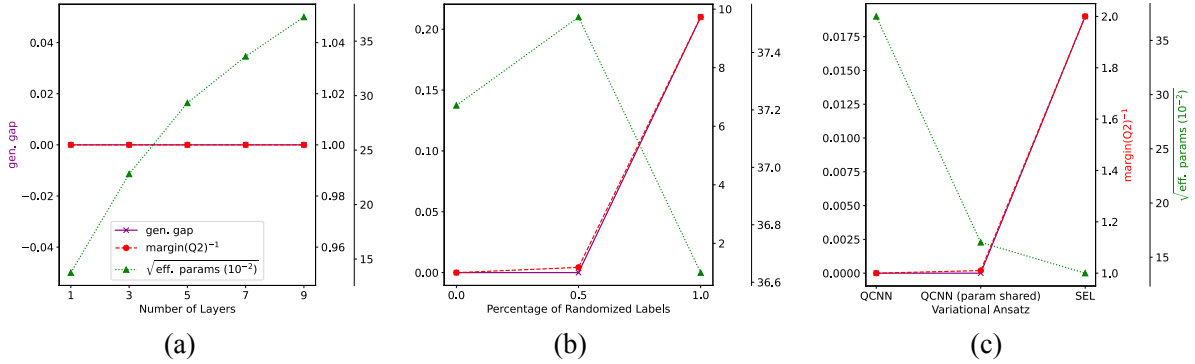


Figure 2: Illustration of how the generalization gap, median of the margin distribution (a margin-based metric), and effective parameters with a 10^{-2} threshold (a parameter-based metric) vary with the number of layers, percentage of randomized labels, and the choice of variational ansätze.

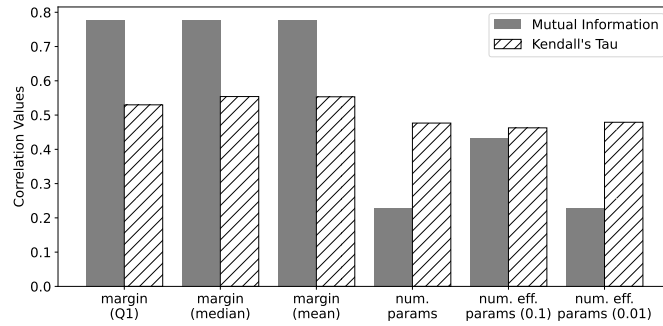


Figure 3: Comparative analysis of mutual information (solid) and Kendall rank correlation coefficients (shaded) between the generalization gap and various metrics. The first three columns represent margin-based metrics, while the last three columns represent parameter-based metrics.