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Grokking as an entanglement transition during training dynamics of MPS machine learning

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Generalizability is a fundamental property for machine learning algorithms, detected by a grokking transition during training dynamics. In the quantum-inspired machine learning framework we numerically prove that a quantum many-body system shows an entanglement transition corresponding to a performance improvement in binary classification of unseen data. Two datasets are considered as use case scenarios, namely fashion MNIST and genes expression communities of hepatocellular carcinoma. The measurement of qubits magnetization and correlations is included in the matrix product state (MPS) simulation, in order to define meaningful genes subcommunities, verified by means of enrichment procedures.

Sessione

Quantum Machine Learning

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