

ABSTRACT

This research proposes a novel approach for sentiment analysis on stocks by leveraging quantum neural network technology. This quantum recurrent neural network helps us in reducing the time complexity. The study focuses on extracting sentiment information from diverse sources, including news articles, social media, and financial reports, to predict the sentiment associated with a particular stock. The framework integrates traditional natural language processing techniques with the cutting-edge capabilities of quantum computing. In this work, a Quantum Recurrent Neural Network (QRNN) is developed to process and analyze the intricate relationships within textual data, capturing subtle nuances in sentiment that may influence stock prices. The QRNN incorporates quantum computing principles, allowing for parallel processing and improved handling of complex dependencies in language data. This quantum-enhanced sentiment analysis model aims to provide a more accurate and nuanced understanding of market sentiment, consequently enhancing stock prediction accuracy. The experimental setup involves training the QRNN on a comprehensive dataset of financial news articles and associated stock performance data. The performance of the proposed model is evaluated against traditional sentiment analysis techniques and classical neural networks, showcasing the potential advantages of leveraging quantum computing in financial sentiment analysis. The outcomes of this research could significantly contribute to more informed decision-making in financial markets by providing investors and traders with a sophisticated tool for predicting stock sentiment. Additionally, the study explores the implications and challenges of implementing quantum neural networks in real-world financial applications, paving the way for further advancements in quantum-enhanced machine learning for finance.