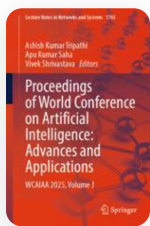


Quantum-Enhanced Deepfake Detection: A Hybrid Machine Learning and Quantum Computing Approach for Secure Surveillance

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Abstract

Deepfake technology poses a growing threat to cyber security by creating convincing fake images and videos. In this research paper, we propose a hybrid detection model that combines the strengths of Quantum Computing (QC) and Machine Learning (ML) to handle this issue more effectively. Our approach integrates quantum feature extraction with Convolutional Neural Networks (CNNs) to improve the accuracy of deepfake detection. The solution is tested on standard datasets like FaceForensics++ and Celeb-DF,

the model outperformed traditional CNN and Transformer-based methods, achieving up to 91.8% accuracy and 91.5% F1-score. These promising results suggest that quantum-enhanced models could play a powerful role in future secure surveillance and digital forensics systems.

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