Chapter 10
A Proficient Fake Fingerprint Identification System Based on CNN to Ensure Human Security

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ABSTRACT

This study presents an innovative Convolutional Neural Network (CNN) framework designed to improve fingerprint classification, particularly distinguishing between authentic and counterfeit prints. Fingerprint authentication is crucial in biometric security, but advanced techniques for creating fake fingerprints demand ongoing improvements in classification methods. We propose a CNN architecture that effectively captures the intricate features of fingerprint images using convolutional and pooling layers, enhanced by dropout regularization to prevent overfitting. Our approach employs a diverse, meticulously curated dataset, divided into training, validation, and test sets for robust model training and performance evaluation. Rigorous testing, including cross-validation and extensive metrics analysis, demonstrates our CNN model's exceptional accuracy and reliability in discerning genuine from fraudulent

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