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Handwriting Signature Forgery Detection using Machine Learning (Support Vector Machine)

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Abstract

Signature verification stands as a formidable challenge within the domain of biometric authentication due to its inherent variability and complexity. This paper delves into the intricacies surrounding signature verification systems, highlighting the multifaceted nature of signatures and the difficulties they pose in authentication processes. Signatures exhibit significant variations influenced by individual style, mood, and environmental factors, presenting hurdles for accurate verification. Furthermore, the dynamic nature of signatures, evolving over time, exacerbates the challenge.

To address these challenges, advanced algorithms leveraging machine learning, pattern recognition, and image processing techniques have been developed. These algorithms analyze various features of signatures, including stroke trajectory, speed, pressure, and pen angle, to establish identity. Despite these advancements, signature verification remains vulnerable to errors, especially in cases of poor signature quality or sophisticated forgeries.

This thesis examines recent research efforts aimed at enhancing the accuracy and reliability of signature verification systems. we use SVM

SVM can be effective for signature detection, the success of the approach depends heavily on the quality of the training data, the choice of features, and the parameter tuning of the SVM model. Additionally, integrating SVM with other techniques such as deep learning may further enhance the performance of signature detection systems, especially in complex scenarios or with large-scale datasets.