Lay summary

Improving Contactless Palm Print Recognition Technology
Biometric technologies, such as facial and fingerprint recognition, have become widely used for identity verification in various applications. Another promising biometric solution is palm biometrics, which utilizes the unique patterns found on the human palm for accurate and secure identification. This thesis focuses on investigating and proposing a comprehensive design for a contactless palm print recognition system.

Contactless palm print recognition offers advantages such as cost-efficiency and hygiene. However, challenges arise from factors like camera distance and variations in palm openness. By utilizing machine learning and image analysis techniques, the thesis achieves an average accuracy of 0.90 in classifying palm openness from input images. This means that the system can effectively determine whether a palm is more closed or open based on the captured image. The research also reveals that variations in palm openness lead to slight differences in the width, depth, and crease distances of the palm print, affecting the matching process between images. The findings demonstrate that palm images are best matched with others of the same level of openness.

These results highlight the significance of considering palm openness and its impact on the performance of contactless palm print recognition systems. Additionally, the study validates the classifier's ability to correctly classify palm openness. By addressing these challenges and taking palm openness into account, the accuracy and applicability of contactless palm print recognition technology can be improved.

Enhancing contactless palm print recognition technology is crucial for its widespread adoption in various identity verification applications. The improvements in accuracy and reliability achieved through this research can lead to more secure and efficient systems, while also ensuring a hygienic and convenient user experience.