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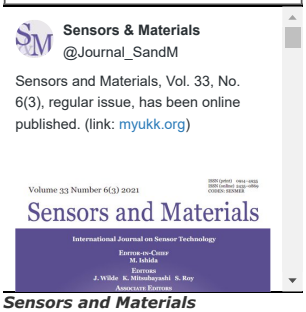

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Establishment of Biometric Verification System Based on Design Science Research Methodology and Sensing System for Smart Border Control [PDF]

I-Chen Lin and Wei-Hsi Hung

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Keywords: border inspection system, biometric verification system, design science, border control

Rapidly increasing traveler traffic has burdened the border security and clearance service. Therefore, assisting border guards and travelers to carry out sustainable border strategies is becoming more crucial. The key of such strategies centers on the interaction between sensing systems and user characteristics, and sensing technology is of great help for an efficient clearance service and smart border control. However, a practical problem is that deciding whether to allow or prevent entry at the border is ambiguous because checking identities with only a visual inspection is cumbersome. Hence, a biometric verification system (BVS) that compares a live biometric sample of a traveler against images of them obtained from the database is needed. In this study, we model and develop a fingerprint sensing system using design science research methodology (DSRM). An integrated framework, components, workflows, and schema are proposed. The novelty of this system is that the artifact retains the flexibility of the acquisition and match processes. After presenting a case study with fingerprint modal biometrics, we evaluate the usage of such a sensing application and the results to generate a sustainable strategy for managing security issues in the border-checking environment. This study offers a solution to balance the convenience of travelers and the role of inspectors.

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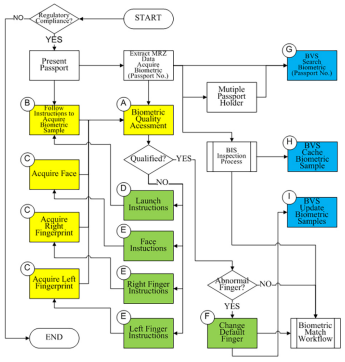

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