

Microprocessors and Microsystems

FPGA implementation of fast & secure fingerprint authentication using trsg (true random and timestamp generator)

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Abstract

In the digital authentication system, the emerging technology is fingerprint authentication, which have been concentrated more attraction towards security and control. Existing authentication systems such as Biometric cryptosystems, Cancellable templates, and Bio-hashing provide a solution for addressing these vulnerabilities. To implement the fingerprint authentication with more accuracy, a novel FPGA based authentication system has proposed in this paper and the performance has evaluated with the help of the previous scheme. First, finger code template (FCT) is generated by applying transformation function on finger code and biometric key created from the randomization process. While in the second phase, 40-bit binary string (ofc), 40-bit binary time stamp, random numbers 0 and 40 (r1, r2, r3, and r4) are generated from TRSG (True Random and Time Stamp Generator) which is converted into 80-bit efc. Based on the obtained efc, the person details are compared with primary data stored in the database. The simulation result shows that the proposed method reduces the LUT utilization to 0.17% and complexity as 14%. Hence, FPGA based fingerprint authentication shows its excellence with the lowest complexity value and thereby enhance the presentation of the biometric authentication system.