ANALYSIS ON THE ROBUSTNESS OF THE PRESSURE-BASED INDIVIDUAL IDENTIFICATION SYSTEM BASED ON NEURAL NETWORKS

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Abstract. *In this paper, an individual identification system based on dynamic feature of signature pressure is introduced first. Then uniformed characters are proposed as register characters for the system, instead of traditionally employed individual signature,to address the problem of great difference in the recognition capabilities of the system for different registrants. To evaluate the effectiveness of the proposed method, twenty people are selected as target registrants and the recognition capabilities of the original signature-based systems are studied and compared with that of the uniformed-register-characters-based systems in experiment section. The results show that with the uniformed register characters, the proposed system seems to have important merit on the stability in terms of recognition capabilities for different registrants.*
Keywords: Individual identification system, Signature pressure, Neural network, Neuro-template, Robustness, Uniformed register characters.

1. **Introduction.** Recently, on-line business has become prosperous, along with the rapid development of network technology and wide application of the internet. This gives more importance to internet security, such as remote log-on, appliance and data securely accessing, and gives a new challenge to individual verification or identification techniques in existent to date. The dominance of traditional security password and personal identification number(PIN) in the computer industry is being substituted by biometric features, such as fingerprint, palm print, iris, voice, face and signature, due to the advantages of biometric features including being unique and high resistance to forgery.

In view of utilization of the internet, we focus on signature identification, which is a time-honored means for identity recognition and can easily be accepted by people without any antipathy. A lot of effort have been devoted to the domain of signature identification [1-11]. In recent years, signature identification systems based on dynamic features increasingly attracts the interest of researchers because of the invisibility of dynamic signals and the high difficulty of exact forgery.

In this paper, we introduce an individual identification system in which the dynamic pressure of signature is used exclusively as individual feature for personal identification. Different from other pressure-based signature identification systems [8-10], neural network technology combined with multi-template matching scheme is employed in our system.