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INFORMATION TECHNOLOGY***

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COMPUTER SCIENCE AND APPLICATIONS

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GAIT ANALYSIS TECHNIQUES - A SURVEY

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Abstract

Biometric systems are becoming increasingly important, since they provide more reliable and efficient means of identity verification. Biometric gait recognition (i.e. recognizing people from the way they walk) is one of the recent attractive topics in biometric research. This paper presents a review of the methods used in recognition and analysis of the human gait from different approaches like, floor sensor, wearable sensor and image processing.

Keywords – Gait, Non wearable, Wearable, image processing

1. Introduction

User authentication is the process of verifying claimed identity. Conventionally, user authentication is grouped into three classes:

- Knowledge - based,
- Object (or Token) - based,
- Biometric - based.

The knowledge-based authentication is based on something one knows and is characterized by secrecy. The examples of knowledge-based authenticators are commonly known passwords and PIN codes. The object-based authentication relies on something one has and is characterized by possession. Traditional keys to the doors can be assigned to the object-based category. However, usually the token-based approach is combined with the knowledge-based approach. An example of this combination is a bank-card with PIN code. Biometric authentication is based on something one is. In knowledge-based and object-based approaches, passwords and tokens can be forgotten, lost or stolen. There are also usability limitations associated with them. Biometric-based person recognition lacks above mentioned difficulties of knowledge-based and object based approaches. However, one of the most important aspects of biometrics is that they establish more direct and explicit link with humans than passwords or tokens do, since biometrics use measurable physiological and behavioral features of human being. There are various types of human traits that can be used as biometric, e.g. fingerprint, face, iris, hand geometry, gait and so on. In this paper, we present a biometric recognition system based on gait.