

A New Web-based Architecture Based on Iris Biometrics Technique to Decrease Credit Cards Frauds over Internet

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Abstract

E-commerce is an outcome of globalization and technology outbreak of 21st century. Increasingly, more products and services are sold over Internet; hence, there is a growing need for a combination of legislation and technical solutions to globally secure customer privacy. Credit card fraud is one of the crimes especially when it is used for web-based transaction. In this paper, a technical solution using Iris authentication technique is proposed for protecting identity theft in e-commerce transactions because Iris patterns are unique to an individual. Further, this research proposes authentication of e-commerce users by using Iris biometric technique as one of the most secure biometric algorithms. Therefore, this research proposes a web-based architecture which uses a combination of Image Processing and secure transmission of customers' Iris templates along with credit card details for decreasing credit card frauds over Internet.

1. Introduction

Shopping over the Internet is another alternative to shopping at a brick-and-mortar store. Credit cards are the primary means of payment for goods and services purchased online. By means of credit card, its information is transmitted over the Internet, which may not have the same level of security as phone, mail, or fax. Security issues are maybe the most important thing in online shopping. Methods to ensure secure online payment by credit card are therefore important to the success of shopping over the Internet. In online transaction with credit card, buyers want to be assured that the provided information about credit card won't be abused or stolen (a possible fraud). Credit card fraud on the Internet is a more pervasive problem. Anybody who has access to a credit card number and expiration date can buy anything over the Internet. On the other hand, neither party can be certain of the other's identity [1]. Credit cards were designed to rely on physical signatures for authentication, a mechanism that is rendered useless in e-commerce. The online purchaser does not have to present a physical card, which may contain additional security features, e.g. additional code numbers, photographs.

So the lack of authentication of online customers is perceived. To counter this threat, the authentication of the

buyer is essential. Authentication using biometrics is a secure approach that can be proposed. In fact, biometric technique is used for preventing identity theft and false authentication. Recently, human Iris recognition is recommended as approval of human identification. This organ of the eye which is well protected from the external environment is easily visible from within one meter of distance. Iris recognition is now considered as one of the best and most precise solutions to security problems for human identification because it is the most unique feature of every person which has been discovered by now [2]. So, Iris recognition can be used for authentication of online customers.

This paper proposes a web-based architecture to use encrypted Iris pattern as biometric attribute for authentication of a customer for e-commerce transactions which includes a secure biometric template transmission scheme and a high performance algorithm for Iris recognition as human identification.

2. Background

The iris has been historically recognized to possess characteristics unique to each individual. In the mid 1980s, two ophthalmologists, L. Flom and A. Safir, proposed the concept that no two irises are alike. They researched and documented the potential of using the iris for identifying people and were awarded a patent in 1987. Soon after that, J. Daugman developed an intricate and sophisticated algorithm that brought the concept to reality and patented in 1994. [15]. Iris is the colored ring of tissue that surrounds the pupil of the eye. More specifically, the iris is a thin, contractile, pigmented diaphragm with a central aperture called the pupil. It is a part of the human eye which acts like a photo-receptor converting information in the form of light energy to nerve activity (electrical spikes). These electrical spikes are subsequently relayed to the optic nerve and the brain, where further information processing occurs, resulting in the identification and recognition of incoming visual information [18]. The potential of the human iris for biometric authentication/identification comes from the anatomy of the eye. The iris is an extraordinary structure that contains abundant textural information which is unique to each individual [19]. Shapes in the iris (such as freckles, coronas, stripes, furrows, and etc.) can be considered as elementary components of the iris texture.

