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Polygonal Meshes Predicated Watermarking Algorithm to Avert Misinterpretation of ATM Cards

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Abstract

There is a loophole between the Mazuma card standards followed in the banks and the financial frauds done by the Mazuma card cloning. It undertakes two primary tasks; namely understanding of the traditional standard cash card provided by the banks and a proposed methodology to make them more secure to reduce the Mazuma card frauds. The methodology utilizes the watermarking procedure to embed the customer's unique signature in the magnetic stripe of the Mazuma card which plays a prominent role to authenticate the utilizer. This authentication mechanism is a subsidiary while transaction to secure cash card from being cloned via skimming contrivance. In this paper we compute the Laplacian coordinates and then construct vectors (histogram) followed by embedding the watermark adjusting the state of that histogram. We hide all the users details in this watermark. The watermark extraction is done blindly without referencing the host model. It is also robust and resists the geometrical transformation such as translation, uniform scaling, rotation and vertex reordering.

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Keywords: 3D-Models; ATM Cards; Cloning; Curves; Kirchoffs Matrix.

1. Introduction

In the present scenario where plastic money (bank cards) play an important role, it is vital to have high security and authentication system. In this work, approach is to enhance information security in the ATM cards, using the applications of computer graphics. A advanced watermark will be an advanced indicator installed under a advanced medium, for example, text, audio, picture or feature. It is used for authorized access. Thus, we need a watermark which is robust and can resist various attacks. We are focusing on algorithm for watermarking three-dimensional closed plane meshes, which embeds the watermarking under those geometry, adjusting the position of vertices. We will also be testing the algorithm against geometric transformation; expansion of commotion also network smoothing. We would worried over the heartiness of the watermark against altering strike. Likewise those Laplacian coordinates need aid invariant under interpretation Furthermore revolution signs need aid inserted under the histogram of the lengths of the vectors (x, y, z). Use of histograms makes method, invariant to various effective attacks viz., noise addition, uniform scaling, vertex reordering. Hence, if we hide customers all information in this watermark it will be difficult to alter it.

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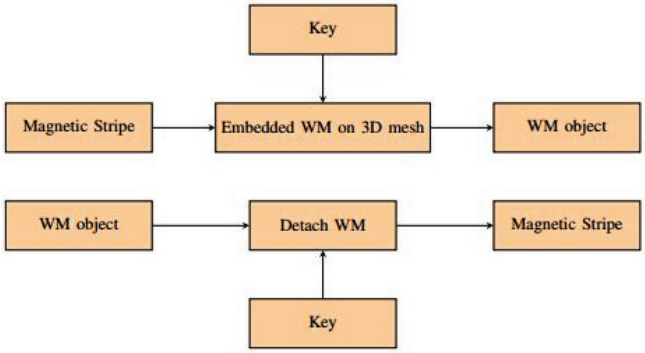

Fig. 1. A Proposed Watermarking Scheme.

Table 1. Track Division in ATM Cards.

Created by airline industry(IATA)	Created by banking industry(ABA)	Created by thrift saving industry

Fig. 2. ATM Card Front End

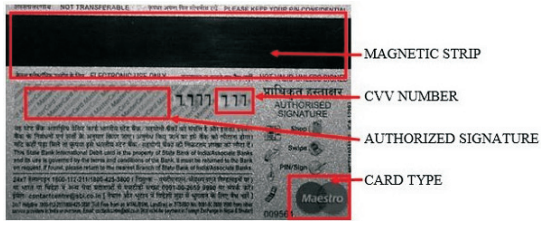

Fig. 3. ATM Card Back End

The rest of the paper is organized as follows:

Section 2 presents the relevant work, section 3 reviews the design of ATM cards. Section 4 gives the basic idea behind watermarking and mathematical background of the same. The succeeding section describes the procedure of embedding watermark into three-dimensional models. Section 6 describes the watermark extraction mechanisms and in the next section a few experimental results are studied. In 7, section we compare the result with other two famous algorithms for watermarking by Zhiqiang *et al.* and another by Wei-Min Zheng *et al.* Finally, we conclude the paper by stating the limitations and future work in the 8 section.

2. Motivation and Background

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2.1 Magnetic strip standards

According to ISO/IEC standard 7811, a magnetic strip of an Indian ATM cards contain the following three tracks, each of which has width of $1/10^{\text{th}}$ of an inch[17].

The track contains the following details.

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