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A Study of Enhancing Security of Information Using Multimodal Biometric

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ABSTRACT

Web mining is the methodology used to find valuable knowledge on the World Wide Web from the rich data. Since website mining and data mining have been expanding rapidly in recent years, the imminent need to turn this data in useful information and expertise has attracted a lot of attention. Many applications, such as market research and business management, will benefit from the use of broad data knowledge and know-how. Knowledge discovery can be seen as the mechanism by which information from vast repositories, which is indirectly introduced in the data, is previously unknown and could be useful to users. The method of information discovery in databases is thus a critical step in data mining. Over the past decade, several methods of data mining have been introduced to accomplish specific tasks of knowledge exploration in order to gain valuable information for users. Data mining techniques include mining by association rules, regular mining of objects, sequential mining pattern, maximal mining pattern and closing patterns. Yet how to use the discovered patterns efficiently remains an open question for science, in particular in web mining. We compare these details in this report.

1. Introduction

We compare these methods of data mining using various types of discovered patterns in this study. On the Reuters dataset RCV1 to complete web mining tasks the output of the pattern mining algorithms is examines. The experimental results show that closed pattern methods, such as SCPM and NSCPM, achieve better performance due to the use in the pattern discovery phase of the cutting mechanism.

Over the last decade there have been a growing number of techniques of data mining to carry out various tasks. The following techniques include association rule mining, frequent item set mining and sequential pattern mining. The majority was proposed to find specific patterns within a reasonable and acceptable timeframe with the objective of developing successful mining algorithms. The way these trends can be effectively exploited is still an open-ended question of research with numerous models developed by data mining approaches.

A vast number of linked Web sites are covered by the World Wide Web. A repository such as the image, audio or video not only contains text information but also multimedia objects. Data mining can be called web mining on the World Wide Web, which has earned much attention as the amount of information available on the Internet has grown rapidly. Web mining is classified into a number of categories, including the mining of web content, web mining and web mining. Many methods of web text mining use keyword-based techniques, while others use the sentence technique to construct a text representation for a set of documents. The phrase-based strategies are believed to work better than the keyword approach, since it is known that a phrase carries more knowledge than a single term.

Automatic access of individuals to facilities is becoming crucial in this era of information technology and the technological revolution. A pre-requirement for all trade or personal transactions is the identity authentication of an individual. Falsification and theft can only be prevented if you have defined the identity with confidence, which is difficult to achieve for traditional methods of authentication based on tokening (like the card ID), or on context-based (which can be forgotten) information, like passwords. The new technical field known as biometric reconnaissance was developed and coined or simply described as biometrics. Biometrics is the science of claiming an individual's identity by means of physical evaluation such as fingerprints , iris, man-made geometry, facial recognition, etc. or behavioral properties like expression, gait recognition, keystroke, signature scanning. The combination of biometric features with the user is irreversible and these features are often exclusive to a person and are not easily changed and forged. Biometrics are therefore assumed to be a system which is more accurate. Inherent benefits over conventional personal identification approaches are biometric authentication systems. The protection of biometric data however is of utmost importance and must be secured from external invasion and exploitation because they do not have encryption. The biometric models of individuals must therefore always be maintained.

2. Review of related literature

Lewis [3] Conducted various experiments on a text categorization task using phrasal indexing vocabulary. Ironically, the results showed that the indexing language based on the sentence was not superior to the word. While sentences are less complex and more concise than words, the most likely explanations are: (1) phrases are less descriptive than words, (2) they are low-frequency and (3) they are repetitive and noisy[4],[5]. [2] Phrases are often more repetitive and more clever than words. New experiments have concentrated on identifying better text representations from a text data set in order to solve the problem described above.

One way of achieving the new kind of features is through the use of data mining techniques, such as sequential pattern mining [6]. The data mining methods followed the principle of sequential closed patterns and unclosed patterns of the image with the goal of raising the size of the feature set by eliminating noisy patterns. Nevertheless, it seems possible that each pattern of multiples is treated as an atom in the depiction, when dealing with the long patterns[7], with the low frequency problem. Another problem in the field of data mining methods is that more time is being spent exposing data and therefore developing the data recovery methods less significantly[8][9]. [8].

In most research activities in the data mining community, powerful mining algorithms were developed to discover a variety of trends from a wider data set. But finding useful and interesting patterns remains an open-ended problem[10]. In text mining techniques for the development of a representation with these new types of features can be used to determine various text patterns, such as sequence patterns, repeated

posts, co-occurring words and several grams [6]. The use of semanticized phrases still has doubts about the growing success over fields of categorization tasks of text[3],[4], which means that there is no specific representation approach with dominant advantage over other domains[11], [12]. One choice is to use Pattern Taxonomy[8] to shape representation patterns using the data mining technique.

Data mining technicians include the mining of association rules, regular mining of items set, series patterns, maximum mine pattern and closed mining patterns. In [13], for market basket analysis, the association rules mining must consider certain association rules to meet the minimum support and minimum confidence stated by users [14]. A rule in association is to find associations between objects; i.e., the presence in a database of a set of objects has a strong link to the appearance of another set of objects[15].

The fundamental problem is raised by the quest for association rules[13]. The problems of the mining association rules from large databases can be broken down into two sub-problems: (1) defining items whose help is greater than that of the user; (2) generating the required rules with frequent item sets [16]. The first [13],[17] was much of the work focused. Throughout the literature [18]–[21] various variations have been reviewed in the Apriori algorithm and its implementations.

Liu et al. [22] Frequent Web itemsets mined to find thematic concepts and definitions. Zhang et al . [23] explores the protection of frequent itemsets in complex databases. Frequent itemsets of mining Top-K are recommended in [24]. Web mining is divided into various categories, including web-based content mining, web-based mining and web-based mining[25]. Data mining can be called data mining on the World Wide Web, which has earned much attention because the amount of knowledge available on the Internet has expanded rapidly.

It is proposed to replace keyword-based approaches using tree-like taxonomies as principle members with Pattern Taxonomy Model (PTM)[26]. Taxonomy is a system containing information on the sequence-subsequence relationship. In addition, by following closed sequential patterns, the efficiency of PTM-based models is improved. Due to its reduced dimensionality, the elimination of unclosed sequential patterns often improves the efficiency of the system. The conceptual patterns are classified from the data mining perspective as two types: sequential pattern and non-sequential pattern. First let T = {t1, t2, ..., tk} be a set of terms that are to be viewed as words and keywords in a data set. The meaning is described as follows

An unsequential pattern, which is a subset of T, is then an unordered list of terms.

A sequential pattern, as defined in a {s 1, s2, ... sm} pattern is an ordered list of terms: literally, literally, literally (si literally), described as literally.lubricating terms (si literally, s2, ... ,sn {s = s) can be performed in a sequence. It's different from the usual description where a pattern consists of separate terms.

As described above, statistical properties (for example support and confidence) are generally taken to calculate patterns while mine frequent patterns by using data mining techniques. However, in the stage of pattern deployment and growth, these properties are not successful. Because of their high frequency, short patterns are often important factors that influence output. Therefore, we must seek to follow long patterns that provide more concise detail.

3. Security of multimodal biometric authentication system

Encryption [3, 4] is one way to tackle this problem. Encryption does not support the much needed mutually integrated security and is unsuccessful when data has been decrypted after transmission through the network. To build secure information, cryptography uses encryption methods. Since encryption and crypting are not entirely capable of providing protection during the entire lifetime of the project[4], the necessity has been met by the digital watermarking framework. A piece of data known as a watermark is inserted in the host image by biometric aqua mark using a secret key, so that its content is not changed to a point that is obvious for the Human Visual System (HVS). Other biometric authentication systems based only on one biometric method may not meet the demanding application requirements. These factors opened the way to multimodal biometric authentication system development. In order to identify a person, multimodal biometric systems use more than one biometric feature. In comparison to unimodal systems, these systems give a higher detection rate [5]. One of the most common, reliable methods[6] is the biometric modalities such as fingerprint, facet and iris.

Conventional techniques of personal identification, such as passwords, keys, ID cards and PIN-codes are vulnerable to fraud or falsification, and biometrics are thus the answer. The way to recognize and track a person's physical characteristics is biometrics. The automated verification of biometrics is a useful and valid process, but its reliability must be ensured. In addition, unimodal biometric recognition in most cases can not comply with the application's performance requirements. Recent trends show a higher rate of recognition dependent on multi-modal biometrics. Multimodal biometrics unifies two or more biometric characteristics and can thus mitigate in multimodal biometric systems the problems which arise in unimodal recognition. However, only biometric data is not secure with the quick ontogenesis of IT. Digital watermarking is one such technique used to safeguard the biometric data against premeditated or inadvertent attacks. This paper proposes an approach to improve the efficiency of the biometric identification system by moving multimodality and to make watermarking more safe.

Watermarking

Watermarking is the technique of incorporating data into elements for authentication such as an image, video or audio file. For security reasons, the data that is inserted later can be identified and extracted from the components. A watermark algorithm includes a watermark structure, an embedding algorithm and an algorithm for detection or extraction. Embedded watermark is needed to be robust, invisible and high-capacity for most applications where protection is appropriate. Watermarks are used primarily to protect copyright, i.e. to define where the material originated from, to monitor the unlawful circulation of copies and to prevent unauthorized access to content. In different scenarios, the specifications for watermarks vary. To establish the origin of the material, it is necessary to include a single watermark in the contents at the distribution source. A single watermark is required to track unauthorized copies based on the recipient's identity or location in the network. Non-blind arrangements are appropriate for such applications only when there is a dispute regarding ownership of content when watermark extraction or detection are needed. Access control, is performed using semi-blind or blind systems, in which the watermark in all approved consumers' devices should be controlled.

4. Conclusion

Digital Intelligence as a new area of study is using artificial information (AI) and IT on the internet. In the one side, findings from those existing disciplines can be considered as being applied to a completely new area. On the contrary, WI may also bring to the existing disciplines new problems and challenges. WI can also be called to enhance or extend the AI and IT systems. Whether WI is a subset of AI and IT or a child in a good marriage between AI and IT remains to be seen. Nevertheless, WI studies will benefit from AI and IT tests,

practice, achievements and lessons, irrespective of what happens. Russell and Norvig analyzed different artificial intelligence concepts in their famous textbook from eight other textbooks, to determine what exactly AI is. The descriptions differ according to the two dimensions they studied. One aspect describes the design and capacity of an AI system, ranging from system thought processes to system behaviour. The other dimension deals with the design of AI systems, from the intimation of addressing human issues to sound decision-making. Discrete transforms the wavelet (DWT) and discrete watermarking algorite for the biometric data based on cosine transforming (DCT). The watermarking signals are incorporated in the high frequency ranges of the wavelet transformation field by means of monolithic value decomposition. And the watermark image is transformed using DWT and DCT before the embedding procedure is followed. The simulation results demonstrate that this watermarking algorithm is also good in many image processing processes and not only maintains image quality well. Incorporating signals and anti-attack are extremely efficient.

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