INTRODUCTION

The use of biometric data like fingerprints to unlock mobile devices and verify identity at immigration and customs counters are used in many different regions/countries. Although its wide application, one cannot change the scan of their fingerprint. Once the scan was stolen or hacked, the owner could not change his/her fingerprints and had to look for another identity security system.

This invention introduces a new technique, which utilises a person's lip motions to create a password (i.e. lip motion password). This system verifies a person's identity by simultaneously matching the password content with the underlying behavioural characteristics of lip movement. Nobody can mimic a user’s lip movement when uttering the password which can be changed at any time.

KEY FEATURES

- Double-security for access control
- No language boundary
- Resistant to mimicry

APPLICATION

The present invention can be used in financial transaction authentication or used together with other biometrics to enhance the security level of systems.

Lip Password: Double Security System for Identity Authentication

Patent No.
US 9,159,321 B2

Priority Date
Feb 27, 2012

TRL 1
Proof-of-Concept

TRL 2
Prototype in Lab

TRL 3
Proof-of-Concept

TRL 4
Prototype in Live Environment

TRL 5
TRL 6
TRL 7
TRL 8
TRL 9

Ready-to-Market

In reference to: IPI Singapore — Simplified

Source: https://www.ipi-singapore.org/tech-offer/help/field_tech_readiness_level

Proof-of-Concept Prototype in Live Environment

TRL 4

In reference to: IPI Singapore — Simplified

Source: https://www.ipi-singapore.org/tech-offer/help/field_tech_readiness_level

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INTRODUCTION

Mobile geo-social networking and location-based services are believed to be the killing application for the next generation mobile computing industry. However, privacy and security concern raised by both end-users and government authorities have been hindering the deployment and acceptance of these services. As recognised by the Presidents of China and the U.S. in their recent meeting in June 2013, cyber-security becomes a key priority in the administration. In addition, the recent incidents related to privacy or security breaches in IT domain, such as Snowden, PRISM programme and Heartbleed have given us strong signals that IT not only brought convenience to us as regular users, but also to parties on the opposite side. No one should take privacy for granted and blindly trust in any service providers.

People might think location data are less important than their financial or medical data, especially if such data are given to big brands. However, the Snowden and the PRISM programme have illustrated that large corporations are put under great pressure (either politically or technically) in giving away people’s privacy. To make things worse, as average users may have left off so many inter-correlated data in various products offered by these corporations, which makes our location data even more sensitive. For example, the company with the internet searching engine plus the location base system may know exactly what disease you have by seeing your search on pill name and locating you in a pharmacy 30 minutes later. Regarding this, everyone shall take it seriously when trusted companies such as Microsoft and Google access one’s location data.

Having concerned the privacy and security in IT, this invention has brought the resolution to this issue. In particular, this invention gives an innovative quantitative solution on continuous proximity detection among peers without disclosing their location information to the server. It adopts the grid-and-hashing paradigm and designs optimal grid overlay and multi-level dynamic grid schemes to increase the detection accuracy while saving the wireless bandwidth and CPU costs.

KEY FEATURES

- Highly accurate and reliable authenticating location-based services
- Strong privacy and security
- Easy to use

APPLICATION

This invention serves a cloud-computing middleware for providing proximity information to mobile geo-social networks without compromising location privacy.

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INTRODUCTION

According to statistics from the US Government’s report in 2014, 31% of fatal traffic accidents are due to fatigue driving. However, unlike drink driving, there are no laws regulating driver fatigue. In view of this, we have developed an innovation system.

This system, for which a US patent has been filed, requires only a smart phone to run. Using the eye-tracking technology, the system analyses the driver’s facial expression and head pose captured by a real-time video on the smart phone. An alarm is automatically set off to alert the driver when symptoms of drowsiness are observed. As it is simple and reliable, this technology has huge market potential and can make our roads safer.

KEY FEATURES

- Applicable to any smart mobile devices
- Real-time tracking
- Efficient detection
- High reliability
- Cost effectiveness

APPLICATION

The invention can be used by: (1) all drivers and machine operators, whose fatigue would put someone, including themselves, in danger and (2) vehicle operators, government transport department and insurance companies, which benefit from the reduction of traffic accident occurrence.
簡易、快速及準確度高的中藥檢測方法

簡介

中藥歷史悠久，療效顯著，副作用相對比西藥少。近年，西方國家亦漸漸趨向中醫藥的研究。然而，由於中藥材在市場上存在真偽、優劣品質問題，對中醫藥的信譽、療效和人們的生命健康均帶來不良的後果。因此，中藥材的品質鑑定在中藥療效，安全及發展中扮演著極其重要的角色。目前，中藥材的鑑別主要依賴觀察者的經驗或理化方式。前者方法誤差機率大；後者方法相對複雜、費時、成本高，並且重複性低。

本發明可通過紅外光譜，鑑定中藥材的品種、來源地及生長方式。本發明的優點在於用戶可直接將待識別的實物樣本的紅外光譜數據輸入系統。該系統中的專用軟件將根據已建立的數據庫，對輸入的紅外光譜數據進行處理後，可迅速將鑑定結果顯示給用戶。

主要特性

- 試驗設置簡單
- 無論氣體、固體或液體均可進行檢測
- 簡單、快速、可靠、高精度、低成本

應用

本發明中的檢測，可針對中藥材、食品、飲品、奶粉及貴價產品的真偽、優劣進行快速準確的檢測。

In reference to: The TRL Scale by US-DoE

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INTRODUCTION

Digital images are created at a rapid rate, while indexing and searching them semantically present a significant challenge. Many raw images are constantly uploaded with few meaningful direct annotations of semantic content, limiting their search and discovery. While some sites encourage tags or keywords to be included manually, such is far from universal and applies to only a small proportion of images on the Web. Manual characterization of semantic image contents is often subjective, labor intensive, and inconsistent.

The present invention introduces a useful search method which utilizes metadata to characterize, search, and retrieve image repositories based on image contents and semantic attributes. It furnishes a mechanism that enables the automatic and semi-automatic classification, annotation, tagging, indexing, searching, identification or retrieval of images based on their contents, semantic properties and metadata characteristics. The image capture metadata can provide a lot of information such as focal length, exposure time, relative aperture, flash information, ISO setting, angle of view, subject distance, timestamp and Global Positioning System (GSP), etc. Through correlation with external databases, information relating to an image may also be substantially enhanced and augmented.

KEY FEATURES

- Large information content
- Automatic and efficient
- Good accuracy and consistency

APPLICATION

The present invention can be applied to image databases, web searching, personal search, community search, broad-based or vertical search engines for internet, intranet and extranet, etc.
**INTRODUCTION**

Grayscale printers are commonly used for monochromatic publishing and printing that adopts the conventional method to convert color images to grayscale images. Since only luminance is used for image conversion, it causes loss of visual information. In other words, visual contrasts that are visible in color images become invisible in the converted grayscale images and significant information may be lost. There are two methods using multidimensional scaling for converting color to grayscale, which are based on either local contrasts enhancement between pixels or global contrasts between colors. Such methods, however, employ multidimensional scaling and involve a large number of variables which are time and resource intensive, and therefore unsuitable for real-time applications such as printing.

This new invention relates to a technique and device that can generate high quality grayscale images in real time, by combining luminance component and the principal chromatic component of a color image in CIELAB color spaces together to form a grayscale image.

**KEY FEATURES**

- Converting high quality grayscale images
- Fast response time

**APPLICATION**

This technique can be applied to grayscale printing devices, other monochromatic publishing and printing, medical imaging and remote sensing applications.
INTRODUCTION

Searching is very common nowadays and many people perform such works for studies, works or entertainments every day. Sometimes, the search results may cause a lot of troubles due to poor search index. Furthermore, digital resources to be searched can be stored and managed as a localized or distributed repository of images, video, audio, graphical or other multimedia data objects, as well as structured composite items, services, programs, modules, files, documents, systems, applications, networked peers, and agents, which may be difficult or costly to be indexed.

This invention introduces a new system, which utilises collective intelligence, evaluation, and judgment, including web intelligence, to create and adapt the content of a generalized index hierarchy for digital resources to be searched. In particular, the invention focuses on the indexing of semantic contents and/or pragmatic characteristics of such digital resources. In addition, by tracking and analysing the searching behavior of users, proxies, and/or meta-search-engines, a search index can be created, tuned, improved and optimised. This method also incorporates an adaptive and evolution mechanism which allows relatively obscured but relevant digital resources to be found.

KEY FEATURES

- High ability to index and search images, videos, and audio data
- Improve ranking and searching of digital resources by incorporating human intelligence through dynamic index evolution
- Provides fault-tolerant indexing
- Improve search performance over time

APPLICATION

The present invention can be applied to web search, personal/local search, community search, enterprise search, broad-based or vertical search engines for internet, intranet, extranet or particular knowledge domains.