



New connection on: : 13-07-2018 : 06:35:13 - Last disconnection on: : 13-07-2018 : 06:34:55

V 4.0.0.44358(LP,U,linux) (Rev:43856 2017-04-27 09:03:29 +0200#(D201802)) (RPM D201802)

Welcome to EPOQUE Rebuild under the Production Environment

[EPODOC: SS 5] face and recognition and device and authentication

Results in EPODOC 262

[SS 6] 5 and image

Results in EPODOC 165

[SS 7] 6 and audio

Results in EPODOC 2

[SS 8] 6 and message

Results in EPODOC 1

[SS 9] 6 and database

Results in EPODOC 18

[SS 10] ..v

[EPODOC: SS 10] ..li



1/18 © EPODOC / EPO

PN - [CN107527207](#) A 20171229

PR - CN20171762172 20170830

AP - CN20171762172 20170830

DT - I

CT - || STSE (A)

[US2015081544](#) A1 20150319 [A] (SCHULZ EGAN [US], et al)

[A] 1-2

* 全文 *;

[US2015269583](#) A1 20150924 [A] (TAYLOR THOMAS JASON [US], et al)

[A] 1-2

* 全文 *;

[CN105825583](#) A 20160803 [A] (NINGBO JIANGDONG JINGCHENG AUTOMATION EQUIPMENT CO LTD)

[A] 1-2

* 全文 *;

[CN105869278](#) A 20160817 [Y] (CHINA TOBACCO RETROSPECTIVE (BEIJING) TECH CO LTD)

[Y] 1-2

* 说明书第0029、0066-0095段, 图1 *;

[CN106228683](#) A 20161214 [Y] (HEBEI XUNING MECH AND ELECTRICAL EQUIPMENT CO LTD)

[Y] 1-2

* 说明书第0083-0098、0130-0144、0161-0186段, 图1、3、7、9 *;

[CN106372939](#) A 20170201 [Y] (SHENZHEN YIXING ELECTRONIC TECH CO LTD)

[Y] 1-2

* 说明书第0024、0027段 *

CNOI - [G06Q20/40145](#) ; [G07F11/00](#)

PA - CHONGQING CLOUDWALK TECH CO LTD

TI - Intelligent shopping payment method based on human **face recognition authentication**

AB - The invention discloses an intelligent shopping payment method based on human **face recognition authentication**, and the method comprises the following main steps: 1, respectively setting an automatic vending **device** and a cloud server, wherein the automatic vending **device** comprises a human **face** detection module, an **image** collection **device**, a data processing module, and an OCR collection module, and the cloud server comprises a data analysis module, an **image recognition** module and a **database**, and a user operates the automatic vending **device** to carry out the vivo detection; 2, judging whether the user is a living body or not: switching to a next step if the user is the living body, or else returning to step 1; 3, employing the **image** collection **device** to collect a human **face image**, taking the human **face image** as a registered human **face image**, and enabling the OCR collection module to collect the certificate information of the user. The method can directly achieve the human **face** payment registration on the automatic vending machine, avoids the tedious operation in inputting and memorizing an account number, and is more humanized.

2/18 © EPODOC / EPO

PN - [CN107480625](#) A 20171215

PR - CN20171675129 20170809

AP - CN20171675129 20170809

DT - I

CNOI - [G06F17/30247](#) ; [G06K9/00228](#) ; [G06K9/00268](#) ; [G06K9/00288](#) ; [G06K9/00979](#)

PA - GUANGZHOU CLOUDWALK TECH CO LTD

TI - Identity **authentication** method based on **face recognition**

AB - An identity **authentication** method based on **face recognition** includes the following steps: S1, an **image** acquisition **device** is set in a monitoring scene, the identity document information and **face** images of personnel frequently going in/out of the monitoring scene are respectively imported to an identity document **database** and a **face** feature **database**, and a corresponding relationship is established between the identity document information and the **face** images in the **face** feature **database**; S2, the **image** acquisition **device** acquires images of passing personnel in real time, and sends the images acquired to an **image** feature **recognition** system for processing; and S3, the **image** feature **recognition** system separates the backgrounds of the

images acquired, and extracts **face** images from the images acquired. The identity document information and **face** images of personnel frequently going in/out of the monitoring scene are respectively imported to the identity document **database** and the **face** feature **database**, highly similar faces are searched through a **face** modeling comparison method, personnel with the same or similar **face** features in the **database** are checked, and thus, false or wrong identity documents can be found.

3/18 © EPODOC / EPO

PN - [CN107423690](#) A 20171201
 PR - CN20171494315 20170626
 AP - CN20171494315 20170626
 DT - I
 CNOI - [G06K9/00268](#) ; [G06K9/00288](#)
 PA - GUANGDONG UNIV OF TECHNOLOGY
 TI - **Face recognition** method and **device**
 AB - The embodiment of the invention discloses a **face recognition** method and a **device**. The method comprises the steps of extracting the Haar feature of a current to-be-recognized **face image**, and detecting the human **face** area of the to-be-recognized **face image** by adopting an ADaBoost classifier so as to obtain a **face region image**; performing the multi-scale feature extraction on the **face region image** by utilizing a convolution neural network model, and obtaining a feature vector of the **face region image**; inputting the feature vector, a pre-built legal **face database** and a preset user similarity threshold value into a multi-task learning model pre-constructed according to a Softmax loss function and a Triplet loss function, and judging whether the to-be-recognized **face image** is a legal user or not according to the output value of the multi-task learning model. The extracted feature is good in robustness and good in generalization ability. Therefore, not only the **face recognition** rate improved, but also the accuracy of **face recognition** is improved. The safety of identity **authentication** is improved.

4/18 © EPODOC / EPO

PN - [CN106339673](#) A 20170118
 PR - CN20161689755 20160819
 AP - CN20161689755 20160819
 DT - I
 PA - SUNYAT-SEN UNIV
 TI - ATM identity **authentication** method based on **face recognition**
 AB - The invention discloses an ATM identity **authentication** method based on **face recognition**. The ATM identity **authentication** method comprises the following steps that (1) a user inserts a card in an ATM and completes password inputting, and then an ATM monitoring system acquires a cardholder **face image** corresponding to the card from a **database**; (2) a real-time monitoring **image** is taken and then **face** detection is performed on the **image**, and appearance of the **face** in the **image** is detected; (3) if the **face** is not detected, the user is prompted to adjust the position to be aligned with a camera, and the process returns to the step (2); if only one **face** is detected, **face recognition** is performed on the user **face** and the **face** of the cardholder; and if multiple faces are detected, the **face** of the largest size is selected to perform **face recognition** with the **face** of the cardholder; and (4) if the user **face** is not matched with the **face** of the cardholder, the user and the cardholder are not the same person through judgment, and an alarm **device** is triggered to alarm.

5/18 © EPODOC / EPO

PN - [CN105975908](#) A 20160928
PR - CN20161269678 20160426
AP - CN20161269678 20160426
DT - I
CNOI - [G06K9/00275](#) ; [G06K9/629](#)
PA - OPZOOM TECHNOLOGY CO LTD
TI - **Face recognition** method and **device** thereof
AB - The invention relates to a **face recognition** method and a **device** thereof. The method comprises the following steps of acquiring a near infrared **image** and a visible light **image** of a target to be detected and determining whether the target to be detected is a real person; according to the near infrared **image** and the visible light **image**, determining weights of a near infrared algorithm and a visible light algorithm and basic attribute information of the target to be detected; determining a comparison score of each sample **image** in a **database** respectively, and according to the weights, determining a near infrared and visible light fusion algorithm fraction of each sample **image** so as to determine a **face recognition** result of the target to be detected. In the invention, through an **image** background, the weights of the visible light algorithm and the near infrared algorithm are determined; based on visible light and near infrared algorithm fusion, identity **authentication** is realized to perform; defects that an environment adaptability is poor and an identification effect is not ideal by using an existing **face recognition** method are eliminated; and **face recognition** accuracy is increased.

6/18 © EPODOC / EPO

PN - [CN104123556](#) A 20141029
PR - CN20141288623 20140626
AP - CN20141288623 20140626
DT - I
CT - || STSE (A)
[JP2000285198](#) A 20001013 [A] (OMRON TATEISI ELECTRONICS CO)
[A] 1-6
* 全文 *;
[DE102007038137](#) A1 20090219 [A] (BOSCH GMBH ROBERT [DE])
[A] 1-6
* 全文 *;
[CN102916986](#) A 20130206 [A] (MITAC INT CORP)
[A] 1-6
* 全文 *
CTNP - || STSE (A)
[X] - 王纯陶, "基于指纹和人脸识别技术的身份认证系统", 《计算机光盘软件与应用》,
[X] 1-6
* 第76-77页 *
PA - UNIV HOHAI CHANGZHOU
TI - Examinee **authentication** system and method based on **image recognition**
AB - The invention discloses an examinee **authentication** system and an examinee **authentication** method based on **image recognition**. The system is

characterized by comprising: a monitoring **device**, an auxiliary **authentication device**, a handheld **device**, an information management **database** and a server, wherein the server is connected to the information management **database**, the camera of the monitoring **device** adopts a kinect camera, and the monitoring **device** transmits collected **image** information to the server through a network. The examinee **authentication** system and method based on **image recognition** has the advantages that, an examinee can be efficiently and accurately authenticated, and the purpose of reminding the examinee of a test location and test information can be achieved. The kinect camera is used instead of a common camera; by using the sense array with strong function of the kinect camera, **recognition** accuracy of human actions can reach 4cm, matched software of kinect can successfully recognize detailed change of a human **face**, so that the kinect camera is easy to obtain and use, and can achieve more useful information than the traditional camera. Thereby an authenticating process is simplified, and the **recognition** process of the examinee identity information is much simpler.

7/18 © EPODOC / EPO

PN - [CN104063690](#) A 20140924

PNFP - CN104063690B B 20170825

PR - CN20141293719 20140625

AP - CN20141293719 20140625

DT - I

CT - || STSE (A)

[US6181806](#) B1 20010130 [A] (KADO YOSHIYASU [JP], et al)

[A] 1-9

* 全文 *;

[CN103218599](#) A 20130724 [A] (SUZHOU FUFENG TECHNOLOGY CO LTD)

[A] 1-9

* 全文 *;

[CN103425978](#) A 20131204 [A] (UNIV NORTH CHINA TECHNOLOGY)

[A] 1-9

* 全文 *

CTNP - || STSE (A)

[YX] - Xin Ni 等, "“Face Recognition System Based on the Second Generation Identity Card”", 《International Conference on Future Computer and Communication Engineering》

[Y] 1-8

* 184-188 *

[X] 1-9

[Y] - 卫保国 等, "二代证人脸识别的多姿态虚拟样本生成方法", 《电子设计工程》

[Y] 1-8

* 138-141 *

PA - (A)

GUANGZHOU PRESTIGE TECHNOLOGY CO LTD

TI - (A)

Identity **authentication** method based on **face recognition** technology, **device** thereof and system thereof

AB - (A)

The invention relates to an identity **authentication** method based on **face recognition** technology, a **device** thereof and a system thereof. The method comprises a step of acquiring the ID card number of the ID card of a person to be authenticated and

acquiring the head **image** of the person to be authenticated through a camera, a step of carrying out one-by-one comparison between the head **image** and all standard images of the population information **database** of the ministry of public security so as to obtain a standard **image** list, a step of comparing the ID card number of the ID card of the person to be authenticated with all standard images in the standard **image** list and judging whether the ID card number of the ID card of the person to be authenticated is consistent with an ID card number corresponding to a standard **image** with the highest similarity, and if so, passing the **authentication**. The **face recognition** technology is used, the **image** and the ID card number information can be rapidly obtained in the improved population information **database** of the ministry of public security, the self-help **authentication** can be carried out through terminal equipment, thus the labor cost is saved, the working efficiency is raised, the used comparison technology is a 1:N mode, and thus the comparison accuracy is improved further.

8/18 © EPODOC / EPO

- PN - [CN103634120](#) A 20140312
- PR - CN20131699783 20131218
- AP - CN20131699783 20131218
- DT - I
- CT - || STSE (A)
[CN102222283](#) A 20111019 [A] (CHANGZHOU RUICHI ELECTRONIC TECHNOLOGY CO LTD)
 [A] 1-10
 * 全文 *;
[CN102364527](#) A 20120229 [A] (USTC UNIV SCIENCE TECH CN)
 [A] 1-10
 * 全文 *;
[CN102622588](#) A 20120801 [Y] (AUTHENMETRIC CO LTD)
 [Y] 2,5,7,10
 * 权利要求第1-4项、说明书第[0008]-[0024], [0076]-[0084]段 *;
[CN102908959](#) A 20130206 [A] (INST APPLIED ECOLOGY CAS)
 [A] 1-10
 * 全文 *;
[CN103279764](#) A 20130904 [YX] (SUZHOU FUFENG SCIENCE & TECHNOLOGY CO LTD)
 [Y] 2,5,7,10
 * 权利要求第1-6项、说明书第[0007]-[0012], [0014]-[0018]段 *
 [X] 1,3,4,6,8,9;
[CN102842040](#) A 20121226 [Y] (GAO YANLING)
 [Y] 1-9
 * 说明书第[0006]-[0017]段 *
- PA - SHANGHAI ELECTRONIC CERTIFICATE AUTHORITY CT CO LTD
- TI - Method and system for real-name **authentication** based on **face recognition**
- AB - The invention provides a method and a system for real-name **authentication** based on **face recognition**. According to the method, personal information of a user including identity card information is acquired by the system, the condition that a personal terminal used by the user starts a camera **device** is detected, the information of a facial **image** from video information picked up by the camera **device** is selected according to a preset **face** posture rule, the identification photo information of a corresponding identity card is retrieved from the national citizen identity information **database** according to the identity card information, the

selected information of the facial **image** is matched with the retrieved identification photo information, and real-name **authentication** of the personal information is performed according the matching degree. According to the method and the system disclosed by the invention, the difficult problem of non-**face-to-face** personal network identity identification is solved to ensure that a user can quickly finish real-time **authentication** anytime and anywhere, and meanwhile, because the user dose not need to provide an electronic identity card, the phenomena of falsely use and embezzlement of identity cards can be effectively prevented.

9/18 © EPODOC / EPO

PN - [CN103426016](#) A 20131204

PNFP - CN103426016B B 20170412

PR - CN20131355211 20130814

AP - CN20131355211 20130814

DT - I

CT - || STSE (A)

[CN101382992](#) A 20090311 [Y] (SHANDONG NEW BEIYANG INFO TECH [CN])
[Y] 1

* 说明书第4-6页 *;

[CN103136551](#) A 20130605 [Y] (TANG ZHI)

[Y] 1

* 说明书第[0035-0040]段 *;

[WO0120564](#) A1 20010322 [A] (ORDICAM RECH ET DEV SA [FR], et al)

[A] 1-10

* 全文 *

PA - (A)

HUBEI MIRCO MODE SCIENCE AND TECHNOLOGY DEV CO LTD

TI - (A)

Method and **device** for authenticating second-generation identity card

AB - (A)

The invention discloses a method and a **device** for authenticating a second-generation identity card. The method includes the steps: reading a basic text message and a **face image** stored in an internal chip of the second-generation identity card; acquiring the surface **image** of the second-generation identity card; acquiring a surface text message of the second-generation identity card from the surface **image** by OCR (optical character **recognition**) technology and acquiring a surface **face image** of the second-generation identity card by a **face** detection and positioning technology; comparing the basic text message and the **face image** stored in the chip with the acquired surface text message and the acquired surface **face image**, and judging authenticity of the identity card according to the difference value between similarity and a preset threshold value. **Authentication** can be performed only by the aid of the identity card without an identity card **database**, the limit on obtaining the identity card **database** is eliminated, and second-generation identity card **authentication** efficiency is improved.

10/18 © EPODOC / EPO

PN - [JP2011165082](#) A 20110825

PNFP - JP5589421B B2 20140917

PR - JP20100029387 20100212

AP - JP20100029387 20100212

- DT - I
- CT - || STSE (A)
[JP2004234355](#) A 20040819 [] (TOSHIBA CORP);
[JP2007149095](#) A 20070614 [] (HITACHI LTD)
- FI - G06T7/00&510B
- FT - 5B043/AA09; 5B043/BA04; 5B043/DA05; 5B043/FA10; 5B043/GA02
- PA - (A)
 OMRON TATEISI ELECTRONICS CO
- TI - (A)
 MONITORING **DEVICE** AND METHOD, AND PROGRAM
- AB - (A)
 PROBLEM TO BE SOLVED: To improve a **recognition** rate in an **authentication** process using a **face image**.
 - SOLUTION: A **face image** authenticating apparatus 21 calculates similarity between an acquired **face image** and a **face image** of a person who is registered in a predetermined **database**, and collates a player with the person who is registered in the predetermined **database** by comparing the similarity which is a calculation result and a predetermined threshold value. A similarity summing portion 109 statistically sums up similarity based on a collation result of a pair of similarity between a feature amount of a **face image** in a collation **image** table and a feature amount of a plurality of **face** images in a dictionary **image** table, the collation result being of each collation **image** in timing preceding just for a predetermined period. A similarity correction value setting portion 110 calculates a correction value of the similarity calculated by the **face image** authenticating apparatus 21 from the summing result of the similarity of the similarity summing portion 109. The present invention is applicable to a monitoring **device**.
 - COPYRIGHT: (C)2011,JPO&INPIT

PN - [US2011135165](#) A1 20110609

PNFP - US8379940 B2 20130219

PR - US20100791152
20100601; US20090183103P
20090602

AP - US20100791152 20100601

DT - *; Rep

CT - || STSE (B2)
[US5850470](#) A 19981215 [
] (SIEMENS CORP RES INC
[US], et al)
[US7492943](#) B2 20090217 [
] (GEORGE MASON
INTELLECTUAL PROP [US])
[US2003169906](#) A1 20030911
[] (GOKTURK SALIH BURAK
[US], et al)
[US2009196510](#) A1 20090806
[] (GOKTURK SALIH BURAK
[US], et al)
[US2010191541](#) A1 20100729
[] (PROKOSKI FRANCINE J
[US])

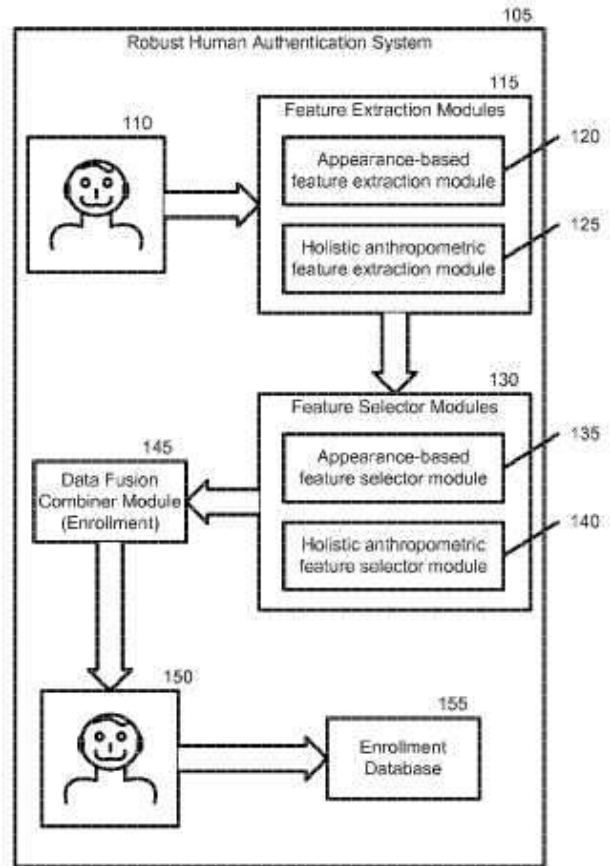
- || R141 (A1)
[US2009196510](#) A1 [];
[US5850470](#) A [];
[US2003169906](#) A1 [];
[US2010191541](#) A1 [];
[US7492943](#) B2 []

CCI - [G06K9/6228](#) ; [G06K9/6256](#) ;
[G06K9/6293](#) ; [G06K9/6247](#)

PA - (B2)
GEORGEMASONINTELLECTUAL
PROP [US]; WECHSLER HARRY
[US]; RAMANATHAN
VENKATESH [US]

TI - (A1 B2)
Robust Human **Authentication**
Using Holistic
Anthropometric and
Appearance-Based Features
and Boosting

AB - (A1)
A new robust
human **authentication**
system, **device**, and
instructions, embeddable in a
physical and tangible
computer readable medium,
for determining if at least one
test **image** obtained using an



imaging **device** matches at least one training **image** in an enrollment **database**, are disclosed. This invention applies the concepts of appearance (PCA or PCA+LDA) and holistic anthropometrics that include head, **face**, neck, and shoulder linear and non-linear geometric measurements. The appearance ("eigen") coefficients and holistic anthropometric measurements selected may be used as feature vectors. A boosting algorithm ranks features as "weak learners" and combines their outputs for "strong" **recognition**.

- (B2)

A new robust human **authentication** system, **device**, and instructions, embeddable in a physical and tangible computer readable medium, for determining if at least one test **image** obtained using an imaging **device** matches at least one training **image** in an enrollment **database**, are disclosed. This invention applies the concepts of appearance (PCA or PCA+LDA) and holistic anthropometrics that include head, **face**, neck, and shoulder linear and non-linear geometric measurements. The appearance (eigen) coefficients and holistic anthropometric measurements selected may be used as feature vectors. A boosting algorithm ranks features as weak learners and combines their outputs for strong **recognition**.

AP - KR20090071623 20090804
 DT - I
 CNOI - [G06K9/00255](#) ; [G06K9/36](#) ; [G06T5/009](#) ; [G06K9/78](#)
 CNOA - [G06T2207/10012](#)
 PA - LEE SANG HWA [KR]; ALPHACAM INC [KR]
 TI - SYSTEM AND METHOD RECOGNIZING ACTUAL OBJECT BY USING A DIFFERENT TYPE **IMAGETAKING APPARATUS**
 AB - PURPOSE: A system and a method recognizing an actual object by using a different type **image** taking apparatus are provided to judge the actual object by using a parallax value through the matching operation of a stereo **image** after judging an actual object of a subject through an infrared **image**. CONSTITUTION: An **image** photographing unit(110) photographs a stereo **image** through a visible ray **image** photographing **device** and an infrared ray **image** photographing **device**. An actual object confirmation unit(120) judges an actual object within a subject **image** through a photographed **image** of the **image** photographing unit. A **face recognition** unit(130) recognizes the **face** of an object corresponding to an actual figure within an **image**. An **authentication** unit(140) compares the **face** information of a recognized **face** region with a certain figure of a **database**.

13/18 © EPODOC / EPO

PN - [CN201679381U](#) U 20101222
 PR - CN20102188363U 20100507
 AP - CN20102188363U 20100507
 DT - I
 PA - SHENZHEN FEIRUISI TECHNOLOGY CO LTD
 TI - Safety box based on **face recognition**
 AB - The utility model relates to a safety box based on **face recognition**, which solves the technical problems of ensuring safe opening of the safety box and improving burglary prevention. The technical scheme is that: the structure of the safety box comprises a safety box body with a safety door, a video **image** acquisition **device** and a matched **face recognition** main control module, wherein a circuit structure of the main control module comprises a central processing unit for storing a matched computing programs and a storage unit with a **database**; and the video **image** acquisition **device** transmits an acquired **face image** signal to the central processing unit for processing by an analysis program and transmits a control signal to a switch circuit of a safety door. The safety box has the advantages that: **authentication** is performed by **face recognition**, so that only legal personnel can start the safety door of the safety box and the safety factor of the safety box is increased; and the **face recognition** has the advantages of non-contact, high safety, convenient use, large popularization benefit and the like.

14/18 © EPODOC / EPO

PN - [CN201508555U](#) U 20100616
 PR - CN20092204053U 20090826
 AP - CN20092204053U 20090826
 DT - I
 PA - FIRS TECHNOLOGY CO LTD
 TI - Internet bar management system based on **face recognition**

AB - The utility model discloses an internet bar management system based on **face recognition**, which solves the technical problem that the existing real-name management system in internet bar can not effectively control the real-name surfing on-line; the adopted technical scheme is as follows: the internet bar management system based on **face recognition** comprises a center **database** arranged at the management center and a remote server which is provided with management software, an end terminal host machine with a local **database** and the matched management software is arranged in the internet bar, a user identity registration **device** which is connected with the end terminal host machine and a client computer and a user identity **authentication** terminal which is connected with the client computer, the user identity **authentication** terminal adopts the **face recognition device**, and the collected user **face image** signal is sent to the local **database** to process to form digital coding **face** template, and the digital coding **face** template is sent to the center **database** to store or update. The advantages of the utility model are as follows: the real-name system in internet bar is really realized, and the internet safety policy can be effectively implemented.

15/18 © EPODOC / EPO

PN - [US2009310828](#) A1 20091217

PNFP - US8090160 B2 20120103

PR - US20080250274
20081013; US20070979735P
20071012

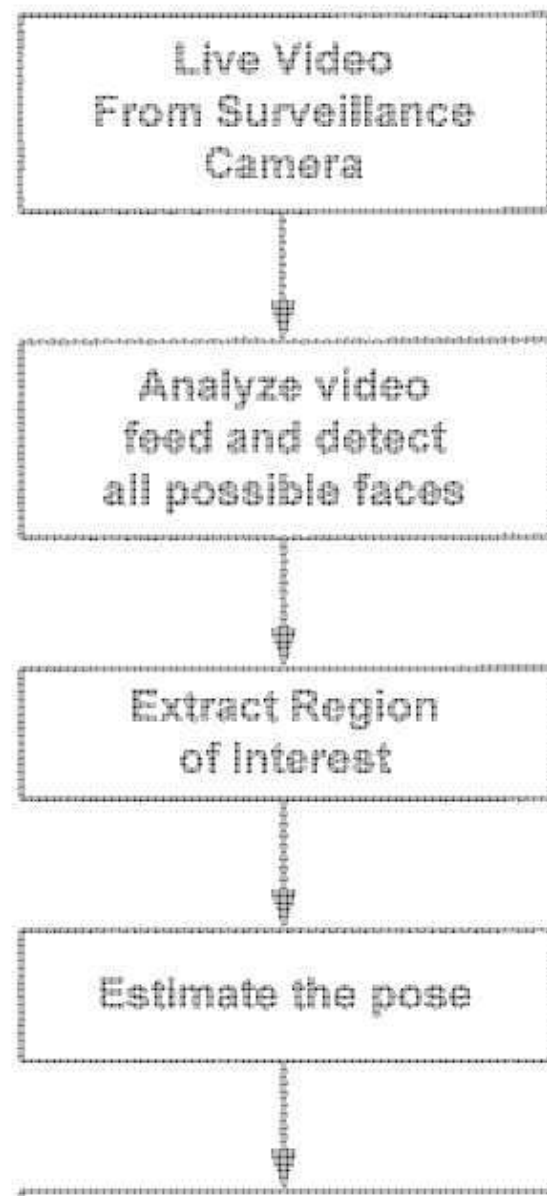
AP - US20080250274 20081013

DT - *; Rep

CT - || STSE (B2)
[US6556196](#) B1 20030429 [] (BLANZ VOLKER [DE], et al)
[US6771303](#) B2 20040803 [] (ZHANG ZHENGYOU [US], et al)
[US7158658](#) B2 20070102 [] (LIU ZICHENG [US], et al)
[US7609860](#) B2 20091027 [] (LEE JINHO [US], et al)
[US7623687](#) B2 20091124 [] (BRONSTEIN ALEXANDER [IL], et al)
[US7756325](#) B2 20100713 [] (VETTER THOMAS [CH], et al)
[US7876931](#) B2 20110125 [] (GENG Z JASON [US])

- || R141 (A1)
[US7158658](#) B2 [];
[US7876931](#) B2 [];
[US6556196](#) B1 [];
[US7756325](#) B2 [];
[US6771303](#) B2 [];
[US7609860](#) B2 [];
[US7623687](#) B2 []

CCI - [G06K9/00208](#) ;
[G06K9/00228](#) ;



[G06K9/00268](#) ;
[G06K9/00288](#) ; [G06K9/4661](#)

PA

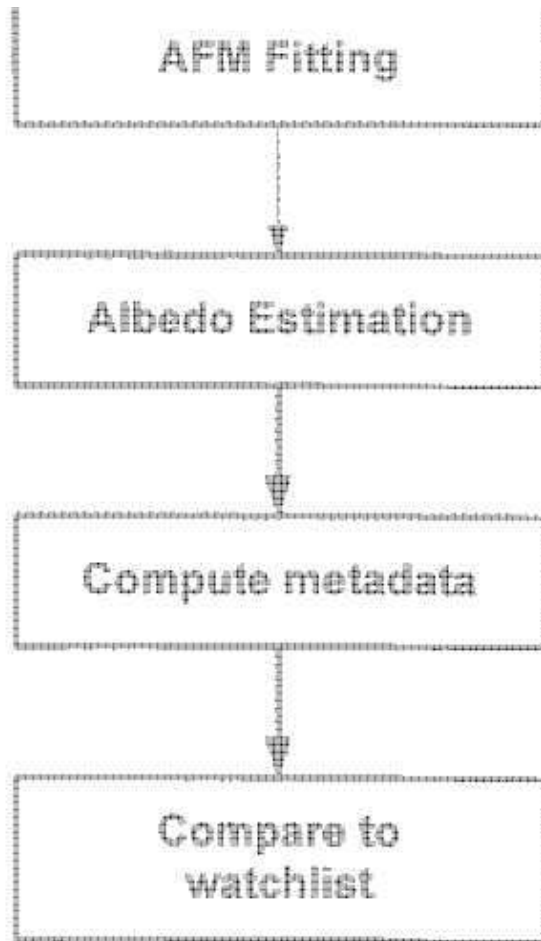
- (A1)
UNIV HOUSTON SYSTEM [US]
- (B2)
KAKADIARIS IOANNIS A [US];
TODERICI GEORGE [US];
THEOHARIS THEOHARIS [GR];
PASSALIS GEORGIOS [US];
UNIV HOUSTON SYSTEM [US]

TI

- (A1)
AN AUTOMATED METHOD FOR
HUMAN **FACE** MODELING AND
RELIGHTING WITH
APPLICATION TO **FACE**
RECOGNITION
- (B2)
Automated method for
human **face** modeling and
relighting with application
to **face recognition**

AB

- (A1 B2)
A novel method and system
for 3d-aided-2D **face**
recognition under large pose
and illumination variations
is disclosed. The method and
system includes enrolling
a **face** of a subject into a
gallery **database** using raw 3D
data. The method also
includes verifying and/or
identifying a target **face** from
data produced by a 2D
imaging or scanning **device**.
A statistically derived
annotated **face** model is fitted
using a subdivision-based
deformable model framework
to the raw 3D data. The
annotated **face** model is
capable of being smoothly
deformed into any **face** so it
acts as a universal facial
template.
During **authentication** or
identification, only a single
2D **image** is required. The
subject specific fitted
annotated **face** model from
the gallery is used to lift a
texture of a **face** from a 2D



probe **image**, and a bidirectional relighting algorithm is employed to change the illumination of the gallery texture to match that of the probe. Then, the relit texture is compared to the gallery texture using a view-dependent complex wavelet structural similarity index metric.

16/18 © EPODOC / EPO

PN - [KR20080046490](#) A 20080527
 PR - KR20060116016 20061122
 AP - KR20060116016 20061122
 DT - I
 CNOI - [G06F17/30271](#) ; [G06K9/00295](#) ; [G06K9/46](#)
 CNOA - [G06T2207/30201](#)
 PA - KOREA ELECTRONICS TELECOMM [KR]
 TI - METHOD FOR IDENTIFYING **FACE** USING MONTAGE AND APPARATUS THEREOF
 AB - A method and a **device** for recognizing a **face** by using a montage **face image** are provided to search the **face** of a criminal easily by generating the montage **face image** with a sketch operator based on a **face image database**, extracting a feature vector from a similar montage **face image**, and performing montage **face recognition**. A feature vector storing part(310) extracts feature vectors from a similar montage **face image** and stores the feature vectors. An authenticator(320) performs **authentication** by receiving a target **face image**, extracting feature vectors from the target **face image**, and comparing the extracted feature vectors with feature vectors stored in the feature vector **database**. The authenticator includes a second generator(321) converting the target **face image** into the similar montage **face image**, a second extractor(323) extracting feature vectors from the similar montage **face image**, and a similarity comparator(333) evaluating similarity by comparing feature vectors of the feature vector storing part with feature vectors of the second extractor. The second generator performs conversion by applying a sketch operation including a DIP(Difference of Inverse Probability), BDIP(Block DIP), or morphology filter.

17/18 © EPODOC / EPO

PN - [KR20030061047](#) A 20030718
 PR - KR20020000855 20020107
 AP - KR20020000855 20020107
 DT - I
 PA - LEE CHEOL HEE [KR]
 TI - **FACE RECOGNITION** ALGORITHM
 AB - PURPOSE: A **face recognition** algorithm is provided to recognize a **face image** acquired from an **image** acquisition **device** such as a camera and a scanner using a computer software. CONSTITUTION: An object and a shape are recognized by interlocking with a **device** such as a camera and a scanner. After recognizing a **face** of a person by interlocking with a **device** such as a camera and a scanner, an

entrance is permitted to an authenticated person. It is judged whether an unspecified number of the **face** images are identical with **image** photographs stored in a **database** using a camera and a scanner. An **authentication** is executed in a mobile phone or a personal computer including a camera and a scanner. The above algorithm is used for a vehicle starting **device** and a vehicle locking **device** through an **authentication**.

18/18 © EPODOC / EPO

PN - [JP2002288670](#) A 20021004

PNFP - JP4675492B B2 20110420

PR - JP20010083728 20010322

AP - JP20010083728 20010322

DT - I

FI - G06T1/00&315; G06T1/00&340A; G06T7/00&300E; G06T7/00&510B;
G06T7/00&650; G06T7/00&660A; G06T7/593; G06T7/60; G06T7/60&150P;
G06T7/70&Z

FT - 5B043/AA09; 5B043/BA04; 5B043/DA05; 5B043/EA04; 5B043/EA08; 5B043/EA12;
5B043/EA13; 5B043/EA15; 5B043/FA07; 5B043/GA04; 5B043/GA13; 5B057/AA16;
5B057/BA02; 5B057/CA08; 5B057/CA13; 5B057/CA16; 5B057/CD03; 5B057/CD05;
5B057/CE12; 5B057/DA07; 5B057/DA08; 5B057/DA20; 5B057/DB03; 5B057/DC05;
5B057/DC08; 5B057/DC13; 5B057/DC33; 5L096/AA06; 5L096/AA09; 5L096/BA04;
5L096/BA18; 5L096/CA05; 5L096/DA02; 5L096/EA03; 5L096/EA16; 5L096/EA43;
5L096/FA24; 5L096/FA25; 5L096/FA67; 5L096/FA69; 5L096/HA08; 5L096/JA09;
5L096/JA16

PA - (A)
HONDA MOTOR CO LTD

TI - (A)
PERSONAL **AUTHENTICATION DEVICE** USING FACIAL **IMAGE**

AB - (A)
PROBLEM TO BE SOLVED: To provide a personal **authentication device** for automatically detecting the direction of a user's **face** as a subject, and executing the **face recognition** in accordance with the direction of the **face** to execute the personal **authentication**. SOLUTION: This **authentication device** is provided with one or plural cameras for imaging the user; a lighting means mounted to illuminate the user's **face**; a detecting means for detecting the direction of the user's **face**, on the basis of the **image** output from the camera; a means for sorting the **face** images into the front faces and the **face** images excluding the front faces, a **database** of the **face image** for checking, created by imaging the images of the user from the front; and an identifying means for collating the front **face image** sorted by the sorting means with the **face image** in the **database** of the **face image** for collating, and identifying the user. According to this **device**, only the facial **image** facing the front can be selected from the user's **face image** photographed by the camera for checking.