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Published:

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(54) **Title**: AUTOMATIC ZOOMING FRONT-CAMERA TWO-DIMENSIONAL QR CODE SENSOR WITHOUT ON-SCREEN TWO-DIMENSIONAL OR QR CODE DISPLAY

(57) **Abstract**: The automatic zooming front-camera two-dimensional or QR code sensor without on-screen two-dimensional or QR code display has special characteristics in that the front camera captures a partial image of the QR code (5) and sends information for processing by a QR code sensor program (4) in order to detect the target image and conduct QR code image (5) analysis and instruct the front camera to automatically zoom in and out to clearly capture the QR code image (5) and decode the QR code (5) as relevant information (6).

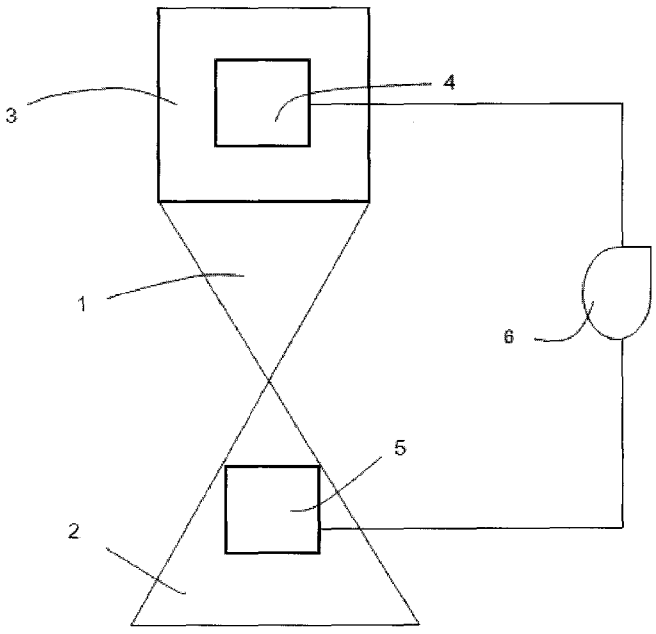

Figure 1

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AUTOMATIC ZOOMING FRONT-CAMERA TWO-DIMENSIONAL QR CODE SENSOR WITHOUT ON-SCREEN TWO-DIMENSIONAL OR QR CODE DISPLAY

Background of Relevant Arts or Science

Reading of QR codes via front cameras with the use of modern smart phones or tablets requires that the front camera be turned on. The camera can capture an image positioned in an area with limited space. As a result, the user needs to position their smart phone or tablet in such a way that it can capture the entire QR code. Furthermore, the distance between the front camera and QR code needs to meet specifications in order for the front camera to capture clear images of the QR code that allows the smart phone or tablet to decode the QR code. The drawback is that the user is required to set the area and spacing between the front camera and QR code based on specifications, which is inconvenient, slow, complicated, outdated and forces the user to keep glancing at the display throughout the entire QR code reading.

In this invention, a concept arose to construct an automatic zooming front-camera two-dimensional or QR code sensor without on-screen two-dimensional or QR code display with characteristics in which smart phones or tablets can have installed a QR code sensor program with the following modes:

Mode 1 – The front camera captures a partial image of the QR code and sends information for processing by the QR code sensor program in order to detect the target image and conduct an analysis to confirm that it is a QR code image.

Mode 2 – The QR code sensor program that provided the QR code image analysis will instruct the front camera to zoom in and out automatically in order to clearly capture the QR code image and decode the QR code as relevant data.

The results of the QR code image capture are not shown on the display modes of smart phones or tablets. Displays will use related programs to decode the QR code currently in use.

Invention Characteristics and Objectives

The automatic zooming front-camera two-dimensional or QR code sensor without on-screen two-dimensional or QR code display with characteristics in which smart phones or tablets can have a QR code sensor program installed with the following modes:

Mode 1 – The front camera captures a partial image of the QR code and sends information for processing by the QR code sensor program in order to know of the target image and conduct an analysis to confirm that it is a QR code image.

Mode 2 – The QR code sensor program providing the QR code image analysis will instruct the front camera to zoom in and out automatically in order to clearly capture the QR code image and decode the QR code as relevant data.

The results of the QR code image capture are not shown on the display modes of smart phones or tablets. Displays will be of the usage of related programs to decoding the QR code currently in use.

This invention is intended to provide an automatic zooming front-camera two-dimensional or QR code sensor without on-screen two-dimensional or QR code display in order to facilitate, accelerate and modernize without the necessity to stare at the display throughout the entire time of reading a QR code.

Branch of Science Associated with the Invention

Engineering as related to the automatic zooming front-camera two-dimensional or QR code sensor without on-screen two-dimensional or QR code display.

Full Disclosure of the Invention

Figure 1 shows the schematics of the automatic zooming front-camera two-dimensional or QR code sensor without on-screen two-dimensional or QR code display with characteristics in which smart phones or tablets (3) can have installed the QR code sensor program (4) by the modes as follows:

Mode 1 – (1) The front camera would capture a partial image of the QR code (5) and send information for processing by the QR code sensor program (4) in order to know of the target image and conduct an analysis to confirm that it is a QR code image (5).

Mode 2 – (2) The QR code sensor program (4) that provided the QR code image (5) analysis will instruct the front camera to zoom in and out automatically in order to clearly capture the QR code image (5) and decode the QR code (5) as relevant data (6) such as looking up IDs of persons or IDs of goods or services.

The results of the QR code image capture are not shown on the display modes of smart phones or tablets (3). Displays will use related programs to decode the QR code (5) currently in use such as the display of the LINE chat program.

Brief Description of Drawings

Figure 1 shows the schematics of the automatic zooming front-camera two-dimensional or QR code sensor without on-screen two-dimensional or QR code display according to this invention.

Best Invention Method

As previously stated in the full disclosure of the invention.

Claims

1. The automatic zooming front-camera two-dimensional or QR code sensor without on-screen two-dimensional or QR code display is such that the smart phones or tablets (3) equipped with front cameras can have installed the QR code sensor program (4).

Special Features

Mode 1 – (1) The front camera captures a partial image of the QR code (5) and sends information for processing by the QR code sensor program (4) in order to detect the target image and conduct an analysis to confirm that it is a QR code image (5).

Mode 2 – (2) The QR code sensor program (4) providing the QR code image (5) analysis will instruct the front camera to zoom in and out automatically in order to clearly capture the QR code image (5) and decode the QR code (5) as relevant data (6).

The results of the QR code image capture are not shown on the display modes of the smart phones or tablets (3) or QR codes (5) on the display of smart phones or tablets (3).

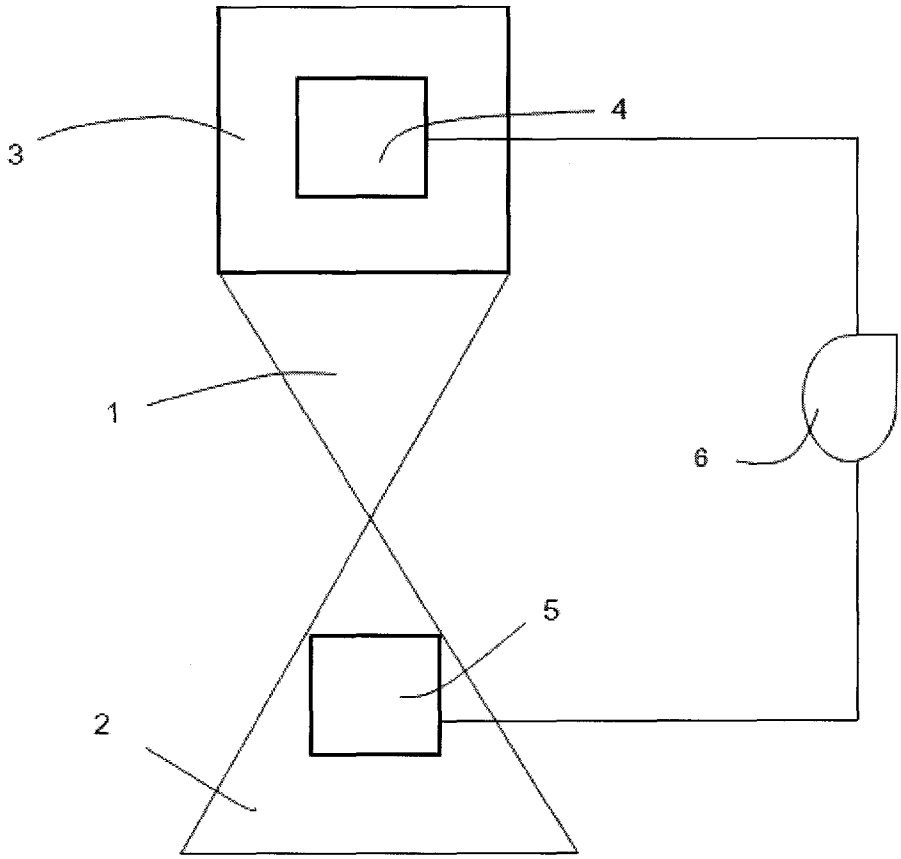

Figure 1

INTERNATIONAL SEARCH REPORT

International application No.
PCT/TH2016/000008

A. CLASSIFICATION OF SUBJECT MATTER

G06K 9/18(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

G06K9/-; G06K7/-

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNABS,CNTXT,VEN,CNKI: automatic, zoom, camera, QR, two-dimensional, code, partial, confirm, capture, clearly, display

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 102982302 A (GUANGDONG OPPO MOBILE COMMUNICATION CO., LTD.) 20 March 2013 (2013-03-20) description paragraph 0004 to paragraph 0014	1
A	CN 101004787 A (ZTE CORPORATION) 25 July 2007 (2007-07-25) the whole document	1
A	US 2012199647 A1 (SAMSUNG ELECTRONICS CO., LTD.) 09 August 2012 (2012-08-09) the whole document	1

☐ Further documents are listed in the continuation of Box C.

☑ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
03 November 2016	**10 November 2016**

Name and mailing address of the ISA/CN	Authorized officer
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INTERNATIONAL SEARCH REPORT
Information on patent family members

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Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 102982302 A	20 March 2013	None	
CN 101004787 A	25 July 2007	CN 100440778 C	03 December 2008
US 2012199647 A1	09 August 2012	KR 20120090388 A	17 August 2012
		US 9449294 B2	20 September 2016