Summary of the Invention

[0008] To improve the manner in which an Identification (ID) card can be detected, the present specification contemplates a two-stage based detection strategy.

[0009] By manner of the contemplated two-stage based strategy, the present specification contemplates that an ID card can be detected in a more reliable/accurate manner without, for example, needing to substantially rely/over reliance on optimal positioning of an ID card relative to a detection device. Moreover, attempts required for capturing client/customer data/information can possibly be substantially reduced (or, for example, only a single attempt might be required). Therefore, the present specification further contemplates that the detection of an ID card in a user-friendly manner and/or an efficient manner can be facilitated.

[0010] In accordance with an embodiment of the specification, there is provided an apparatus.

[0011] The apparatus can include a capturing device that can capture data associated with an Identification (ID) Card which is associated with a customer, captured data being processable by a deep learning algorithm so as to obtain general predictive information, corresponding to at least one detection signal, concerning the ID card. The apparatus can further include a processor that processes the general predictive information by manner of adjustment-based processing to generate at least one adjusted detection signal, the adjusted detection signal being processable by the deep learning algorithm to obtain refined predictive information. The processor further processes the refined predictive information for targeted determination of information concerning the ID card.

[0012] In accordance with another embodiment of the specification, there is provided a processing method.

[0013]The processing method can include a first stage Identification (ID) Card detection step wherein general predictive information, corresponding to at least one detection signal, concerning the ID card is obtained based on a Convolutional Neural Network.

[0014] The processing method can further include a second stage ID card detection step wherein at least one adjusted detection signal is obtained by manner of adjustment-based processing of the obtained general predictive information, wherein refined predictive information is obtained from the CNN based on the adjusted detection signal, and wherein targeted information concerning the ID card is determined based on the obtained refined predictive information.

Claim(s)

1. An apparatus comprising:

a capturing device that captures data associated with an Identification (ID) Card which is associated with a customer, captured data being processable by a deep learning algorithm so as to obtain general predictive information, corresponding to at least one detection signal, concerning the ID card; and

a processor that:

processes the general predictive information by manner of adjustment-based processing to generate at least one adjusted detection signal, the adjusted detection signal being processable by the deep learning algorithm to obtain refined predictive information; and

processes the refined predictive information for targeted determination of information concerning the ID card.

2. The apparatus as in claim 1,

wherein the deep learning algorithm corresponds to a Convolutional Neural Network (CNN) that derives general predictive information in relation to at least one corner point associated with the ID card.

3. The apparatus as in claim 1,

wherein adjustment-based processing is by manner of applying an adjustment factor to the general predictive information.

4. The apparatus as in claim 1,

wherein the general predictive information is in relation to a plurality of corner points associated with the ID card, and

wherein the processor processes the general predictive information by manner of perspective transformation-based processing for targeted determination of information concerning the ID card.

5. The apparatus as in claim 4,

wherein the ID card is associated with four corner points and general predictive information, which can include p1, p2, p3 and p4, relates to the four corner points associated with the ID card, and

wherein perspective transformation-based processing is performed in connection with p1, p2, p3 and p4 to generate four defined corner points as denoted by p1', p2', p3' and p4'.

6. The apparatus as in claim 5,

wherein the processor further processes the general predictive information, p1 to p4, by manner of adjustment-based processing to derive four adjusted corner points as denoted by p1(x, y), p2(x, y), p3(x, y) and p4(x, y), and

wherein adjustment-based processing relates to an application of an adjustment factor to p1 to p4.

7. The apparatus as in claim 6,

wherein the ID card is associable with a width (w) and a height (h) and the ID card is associable with a resolution defined based on "x" by "y", and

wherein the adjustment factor is 0.1, and the adjusted corner points:

p1(x, y) is defined as p1(x-0.1*w, y-0.1*h),

p2(x, y) is defined as p2(x+0.1*w, y-0.1*h),

p3(x, y) is defined as p3(x+0.1*w, y+0.1*h), and

p4(x, y) is defined as p4(x-0.1*w, y+0.1*h).

8. The apparatus as in claim 7,

wherein the processor communicates the adjusted corner points p1(x, y) to p4(x, y) for processing by the deep learning algorithm to derive refined predictive information, and

wherein the processor further processes the refined predictive information by manner of perspective transformation-based processing to derive four refined corner points as denoted by pp1, pp2, pp3 and pp4.

9. The apparatus as in claim 8,

wherein targeted determination of information concerning the ID card is based on at least one of the defined corner points and the refined corner points.

10. A processing method comprising:

a first stage Identification (ID) card detection step wherein general predictive information, corresponding to at least one detection signal, concerning the ID card is obtained based on a Convolutional Neural Network (CNN); and

a second stage ID card detection step wherein at least one adjusted detection signal is obtained by manner of adjustment-based processing of the obtained general predictive information, wherein refined predictive information is obtained from the CNN based on the adjusted detection signal, and wherein targeted information concerning the ID card is determined based on the obtained refined predictive information.

11. The processing method as in claim 10,

wherein the CNN is capable of being trained based on at least one of the first stage ID card detection step and the second stage ID card detection step.