

CLAIMS

1. An authentication method, comprising:
 - receiving a raw image of an ID document, wherein the raw image is captured whilst a flash light is projected onto the ID document or an electronic display of the ID document;
 - determining a type of the ID document using a supplementary convolutional neural network (CNN), wherein the supplementary CNN is trained with training data comprising images of different types of ID documents;
 - selecting a frame based on the determined type of the ID document;
 - cropping the raw image of the ID document using the selected frame to generate a cropped image of the ID document.
 - receiving the cropped image of the ID document;
 - generating an authentication score associated with the cropped image using a CNN, wherein the CNN is trained with training data comprising images of ID documents captured whilst a flash light is projected onto each of the ID documents and images of electronic displays of ID documents captured whilst the flash light is projected onto each of the electronic displays; and
 - authenticating the ID document based on a comparison between the authentication score and a predetermined threshold.
2. The method as claimed in claim 1, wherein generating the authentication score using the CNN further comprises:
 - classifying, by the CNN, a flash pattern that is present on the ID document or the electronic display of the ID document.
3. The method as claimed in claim 2, wherein a characteristic of the flash pattern comprises at least one of:
 - brightness of the flash light that is reflected off a surface of the ID document or the electronic display, and
 - size of the flash light that is reflected off the surface of the ID document or the electronic display.
4. The method as claimed in any one of the preceding claims, wherein the authentication score corresponds to a probability of the image being captured whilst

the flash light is projected onto (i) the ID document and/or (ii) the electronic display of the ID document.

5. The method as claimed in claim 4, wherein the authentication score being less than the predetermined threshold provides an indication that the image is captured whilst the flash light is projected onto the ID document, and wherein the predetermined threshold is established based on a validation dataset.

6. The method as claimed in any one of the preceding claims, wherein the electronic display of the ID document comprises a display screen of an electronic device that is displaying a photograph or screenshot of the ID document.

7. An authentication system, comprising:
 an image processing device configured to:
 receive a raw image of an ID document, wherein the raw image is captured whilst a flash light is projected onto the ID document or an electronic display of the ID document;
 determine a type of the ID document using a supplementary convolutional neural network (CNN), wherein the supplementary CNN is trained with training data comprising images of different types of ID documents;
 select a frame based on the determined type of the ID document;
 crop the raw image of the ID document using the selected frame to generate a cropped image of the ID document;
 a receiver device configured to receive the cropped image of the ID document;
 a score generating device configured to generate an authentication score associated with the cropped image using a CNN, wherein the CNN is trained with training data comprising images of ID documents captured whilst a flash light is projected onto each of the ID documents and images of electronic displays of ID documents captured whilst the flash light is projected onto each of the electronic displays; and
 an authenticating device configured to authenticate the ID document based on a comparison between the authentication score and a predetermined threshold.

8. The system as claimed in claim 8, wherein the score generating device is further configured to classify, using the CNN, a flash pattern that is present on the ID

document or the electronic display of the ID document to generate the authentication score.

9. The system as claimed in claim 9, wherein a characteristic of the flash pattern comprises at least one of:

brightness of the flash light that is reflected off a surface of the ID document or the electronic display, and

size of the flash light that is reflected off the surface of the ID document or the electronic display.

10. The system as claimed in any one of claims 8 to 10, wherein the authentication score corresponds to a probability of the image being captured whilst the flash light is projected onto (i) the ID document and/or (ii) the electronic display of the ID document.

11. The system as claimed in claim 11, wherein the authentication score being less than the predetermined threshold provides an indication that the image is captured whilst the flash light is projected onto the ID document, and wherein the predetermined threshold is established based on a validation dataset.

12. The system as claimed in any one of claims 8 to 12, wherein the electronic display of the ID document comprises a display screen of an electronic device that is displaying a photograph or screenshot of the ID document.