

WHAT IS CLAIMED IS:

1. A computer-implemented method, comprising:
 - receiving, by a data processing computer, input data comprising a first input image and a second input image;
 - providing, by the data processing computer, the first input image and the second input image as input to a machine-learning model, the machine learning model formed by (i) obtaining, by the data processing computer, an initial training set comprising a first set of images of a first type and a second set of images of a second type, (ii) training a neural network to generate output images of the second type from input images of the first type, (iii) generating, by the data processing computer, an augmented training set based at least in part on the first set of images of the first type and the neural network, the augmented training set comprising pairs of images, a pair of images comprising a first image of the first set of images and a second image generated by the neural network from the first image, the first image being of the first type and the second image being of the second type, and (iv) training the machine-learning model to identify whether two input images match, the machine-learning model being trained utilizing the augmented training set; and
 - executing, by the data processing computer, at least one operation in response to receiving output of the machine-learning model indicating the first input image matches the second input image.
2. The computer-implemented method of claim 1, wherein the neural network is a cycle-consistent generative adversarial network, and wherein training the neural network comprises:
 - training a first neural network to generate output images of the second type from input images of the first type; and
 - training a second neural network to generate output images of the first type from input images of the second type.
3. The computer-implemented method of claim 2, further comprising:
 - validating the first neural network by:

providing a first set of input images of a first type to the first neural network to obtain a generated set of images of the second type;

providing the generated set of images of the second type to generate a second generated set of images of the first type; and

comparing the first set of input images of the first type to the second generated set of images of the first type.

4. The computer-implemented method of claim 1, wherein the initial training set comprising the first set of images and the second set of images is unpaired.

5. The computer-implemented method of claim 1, wherein training the machine-learning model to identify whether two input images match comprises training the machine-learning model using the pairs of images of the augmented training set and a supervised learning algorithm.

6. The computer-implemented method of claim 1, wherein the augmented training set comprises pairs of images, each pair comprising two images of the second type, at least one pair of images comprising an image generated by the neural network from one of the first set of images.

7. The computer-implemented method of claim 6, further comprising transforming the first input image received as input data from the first type to the second type utilizing the neural network, the first input image being transformed prior to providing the first input image and the second input image as input to the machine-learning model.

8. The computer-implemented method of claim 1, wherein the first set of images comprise user captured self-portrait images and wherein the second set of images comprises images captured from an identification card.

9. The computer-implemented method of claim 1, wherein the neural network is a cycle-consistent generative adversarial network.

10. A data processing computer, comprising:
one or more processors; and
one or more memories storing computer-executable instructions, wherein executing the computer-executable instructions by the one or more processors, causes the data processing computer to:

receive input data comprising a first input image and a second input image, wherein the input data is received from a computing device different from the data processing computer;

provide the first input image and the second input image as input to a machine-learning model, the machine learning model formed by (i) obtaining an initial training set comprising a first set of images of a first type and a second set of images of a second type, (ii) training a neural network to generate output images of the second type from input images of the first type, (iii) generating an augmented training set based at least in part on the first set of images of the first type and the neural network, and (iv) training the machine-learning model to identify whether two input images match, the machine-learning model being trained utilizing the augmented training set; and

execute at least one operation in response to receiving output of the machine-learning model indicating the first input image matches the second input image.

11. The data processing computer of claim 10, wherein executing the computer-executable instructions by the one or more processors, further causes the data processing computer to collect the first set of images utilizing a web crawler.

12. The data processing computer of claim 10, wherein training the neural network comprises applying an adversarial loss function.

13. The data processing computer of claim 10, wherein the neural network comprises at least two generative networks and at least two corresponding discriminator networks.

14. The data processing computer of claim 10, wherein the input data is received from an interface provided by the data processing computer.

15. The data processing computer of claim 10, wherein the first type corresponds to a portrait image, and wherein the first set of images are portrait images.

16. The data processing computer of claim 10, wherein the second type corresponding to an ID document image, and wherein the second set of images are ID document images.

17. The data processing computer of claim 10, wherein each of the first set of images and each of the second set of images comprises at least some portion of a subject's face.

18. The data processing computer of claim 10, wherein executing the at least one operation in response to receiving output of the machine-learning model indicating the first input image matches the second input image comprises at least one of: approving a transaction or enabling access to a resource or location.