

Claims

What is claimed is:

1. A method for calculating authenticity of a human user, performed by a device having at least one processor, the method comprising:
 - receiving, via a network, an electronic request from a user device, the request instantiating a connection with the user device;
 - generating, using a database of questions, a first question regarding the request;
 - providing, via the network, the generated question to the user device;
 - analyzing video and audio data received via the connection, the analyzing comprising extracting a plurality of facial expressions from the video data;
 - calculating, using a first convolutional neural network, first data corresponding to one or more predetermined emotions based on at least one extracted facial expression, and using a second convolutional neural network, second data corresponding to the one or more predetermined emotions based on at least two extracted facial expressions and the audio data;
 - generate candidate emotion data using the first and second data;
 - determining whether the candidate emotion data predicts a predetermined emotion;
 - based on determining whether the candidate emotion data predicts the one or more predetermined emotions:
 - generating a second question to collect additional data for aggregating with the first and second data; or
 - determining the authenticity of the user and using the determined authenticity to decide on the electronic request.

2. The method of claim 1, wherein the first convolutional neural network comprises a spatial convolutional neural network and the second convolutional neural network comprises a temporal convolutional neural network.
3. The method of claim 1, further comprising training at least one of the convolutional neural networks using a database of resources, the database of resources comprising face data labeled to establish ground truth of the pre-determined emotion.
4. The method of claim 3, further comprising:
 - normalizing the database of resources using time interpolation; and
 - training at least one of the temporal convolutional neural networks using the normalized database of resources.
5. The method of claim 1, wherein the two convolutional neural networks analyze the user's micro expressions.
6. The method of claim 2, wherein the temporal convolutional neural network analyzes the audio data.
7. The method of claim 1, wherein the one or more predetermined emotions comprises surprise, disgust, or repression.

8. The method of claim 1, wherein generating the second question is based on a received answer to at least the first question.
9. The method of claim 1, wherein the human user is a loan applicant.
10. A computing system for calculating authenticity of a human user, comprising:
 - at least one processor;
 - at least one memory storing instructions, wherein the instructions cause the at least one processor to:
 - receive, via a network, an electronic request from a user device, the request instantiating a video connection with the user device;
 - generate, using a database of questions, a first question regarding the request;
 - provide, via the network, the generated question to the user device;
 - analyze video and audio data received via the connection, the analyzing comprising extracting a plurality of facial expressions from the video data;
 - calculate, using a first convolutional neural network, first data corresponding to one or more predetermined emotions based on at least one extracted facial expression, and using a second convolutional neural network, second data corresponding to the one or more predetermined emotions based on at least two extracted facial expressions and the audio data;
 - generate candidate emotion data using the first and second data;
 - determine whether the candidate emotion data predicts a predetermined emotion;

based on determining whether the candidate emotion data predicts the one or more predetermined emotions:

generate a second question to collect additional data for aggregating with the first and second data; or

determine the authenticity of the user and use the determined authenticity to decide on the user request.

11. The device of claim 10, wherein the first convolutional neural network comprises a spatial convolutional neural network and the second convolutional neural network comprises a temporal convolutional neural network.

12. The device of claim 10, wherein the instructions further cause the at least one processor to train at least one of the convolutional neural networks using a database of resources, the database of resources comprising face data labeled to establish ground truth of the pre-determined emotion.

13. The device of claim 12, wherein the instructions further cause the at least one processor to:

normalize the database of resources using time interpolation; and
train at least one of the temporal convolutional neural networks using the normalized database of resources.

14. The device of claim 10, wherein the two convolutional neural networks analyze the user's micro expressions.

15. The device of claim 11, wherein the temporal convolutional neural network analyzes the audio.
16. The device of claim 10, wherein the one or more predetermined emotions comprises surprise, disgust, or repression.
17. The device of claim 10, wherein generating the second question is based on a received answer to at least the first question.
18. The device of claim 10, wherein the human user is a loan applicant.
19. The device of claim 10, wherein the device provides at least seven questions to the user.
20. A method for determining authenticity of a loan applicant, performed by a device having at least one processor, the method comprising:
 - receiving, via a network, an electronic request from a user device, the request instantiating a video connection with the user device;
 - generating, using a database of questions, a first question regarding the request;
 - providing, via the network, the generated question to the user device;
 - analyzing video and audio data received via the connection, the analyzing comprising extracting a plurality of facial expressions from the video data;

calculating, using a spatial convolutional neural network, first data corresponding to one or more predetermined emotions based on at least one extracted facial expression, and using a temporal convolutional neural network, second data corresponding to one or more of the predetermined emotions based on at least two extracted facial expressions and the audio;

generating candidate emotion data using the first and second data;

determining whether the candidate emotion data predicts a predetermined emotion;

based on determining whether the candidate emotion data predicts a predetermined emotion:

generating a second question to collect additional data for aggregating with the first and second data; or

determining the authenticity of the loan applicant and using the determined authenticity to decide on the electronic request.