

SPECIFICATION

QUESTION AND ANSWER DATA PROCESSING METHOD AND APPARATUS, COMPUTER DEVICE, AND STORAGE MEDIUM

The present application claims priority to the Chinese Patent Application No. 2018112354664, filed with the Chinese Patent Office on October 16, 2018 and entitled
5 "QUESTION AND ANSWER DATA PROCESSING METHOD AND APPARATUS, COMPUTER DEVICE, AND STORAGE MEDIUM", which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

10 The present application relates to a question and answer data processing method and apparatus, a computer device, and a storage medium.

BACKGROUND

Most questions and answers are manually implemented in a conventional credit scenario.
15 With continuous development of artificial intelligence technologies, intelligent questioning and answering based on systematic human-computer interaction gradually emerges, and a terminal instead of an operator asks users questions, thereby reducing costs of industry training for the operator.

However, the inventor realizes that the intelligent questioning and answering is currently
20 checked in a simple manner, which is usually a point-to-point manner. To be specific, a server currently checks the intelligent questioning and answering by determining correctness of user answer data. Consequently, check accuracy may be low, and precision of the intelligent questioning and answering is reduced. To be specific, processing accuracy of question and answer data in an intelligent questioning and answering process is low.

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SUMMARY

According to embodiments disclosed in the present application, a question and answer data

processing method and apparatus, a computer device, and a storage medium are provided.

A question and answer data processing method, including:

receiving user answer data and a user answering image that are sent by a terminal;

determining, in a preset determining manner, whether the user answer data is correct;

5 determining a target expression score corresponding to the user answering image in a preset expression score determining manner when determining that the user answer data is correct;

determining target question data in a preset question data determining manner corresponding to the target expression score; and

sending the target question data to the terminal for display.

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A question and answer data processing apparatus, including:

a receiving module, configured to receive user answer data and a user answering image that are sent by a terminal;

15 a determining module, configured to determine, in a preset determining manner, whether the user answer data is correct;

a score determining module, configured to determine a target expression score corresponding to the user answering image in a preset expression score determining manner when it is determined that the user answer data is correct;

20 a question data determining module, configured to determine target question data in a preset question data determining manner corresponding to the target expression score; and

a sending module, configured to send the target question data to the terminal for display.

25 A computer device, including a memory and one or more processors, where the memory stores computer readable instructions, and when the computer readable instructions are executed by the one or more processors, the one or more processors are enabled to implement the steps of the question and answer data processing method in any one of the embodiments of the present application.

One or more nonvolatile computer readable storage media, storing computer readable instructions, where when the computer readable instructions are executed by one or more processors, the one or more processors are enabled to implement the steps of the question and answer data processing method in any one of the embodiments of the present application.

Details of one or more embodiments of the present application are provided in the following accompanying drawings and description. Other features and advantages of the present application are apparent in the present specification, the accompanying drawings, and the claims.

BRIEF DESCRIPTION OF DRAWINGS

To describe the technical solutions in the embodiments of the present application more clearly, the following briefly describes the accompanying drawings required for describing the embodiments. Apparently, the accompanying drawings in the following description are merely some embodiments of the present application, and a person of ordinary skill in the art may further derive other drawings from these accompanying drawings without creative efforts.

FIG. 1 is a diagram of an application scenario of a question and answer data processing method according to one or more embodiments;

FIG. 2 is a schematic flowchart of a question and answer data processing method according to one or more embodiments;

FIG. 3 is a schematic flowchart of a question and answer data processing method according to another embodiment;

FIG. 4 is a block diagram of a question and answer data processing apparatus according to one or more embodiments;

FIG. 5 is a block diagram of a question and answer data processing apparatus according to another embodiment; and

FIG. 6 is a block diagram of a computer device according to one or more embodiments.

DESCRIPTION OF EMBODIMENTS

To make the technical solutions and advantages of the present application clearer, the

following further describes the present application in detail with reference to the accompanying drawings and embodiments. It should be understood that the specific embodiments described herein are merely intended to explain the present application and are not intended to limit the present application.

5 A question and answer data processing method provided in the present application may be applied to an application environment shown in FIG. 1. A terminal 102 communicates with a server 104 through a network. The server 104 receives user answer data and a user answering image that are sent by the terminal 102, determines a target expression score corresponding to the user answering image when determining, in a preset determining manner, that the user
10 answer data is correct, determines target question data in a preset question data determining manner corresponding to the target expression score, and sends the determined target question data to the terminal 102 for display. The terminal 102 may be but is not limited to various personal computers, laptop computers, smartphones, tablet computers, and portable wearable devices. The server 104 may be implemented by a standalone server or a server cluster including
15 a plurality of servers.

In an embodiment, as shown in FIG. 2, a question and answer data processing method is provided. In an example for description, the method is applied to the server in FIG. 1, and includes the following steps.

S202. Receive user answer data and a user answering image that are sent by a terminal.

20 The user answer data is corresponding answer data fed back by a user for current question data. The user answer data may be specifically text data manually entered by the user on the terminal, or may be corresponding voice information collected by the terminal when the user answers the current question data. The user answering image is image information collected when the user feeds back the answer data for the current question data. The user answer image
25 may be specifically corresponding image information collected in an answering process of the user, for example, image information collected when the user manually enters the text data on the terminal for the current question data, or corresponding image information collected when the user answers the current question data. The image information may be specifically information in a form of a picture, a video, or the like collected by an image collector. The user
30 answering image may include but is not limited to a user answering picture and a user answering video. For example, the user answering picture is a corresponding picture that includes a face picture of the user and that is collected when the user answers a question. For example, the user answering video is a corresponding video collected in the answering process of the user, namely,

a video collected when the user answers a question. The image collector may be a camera, and the camera may be a camera configured in the terminal, or may be a separate component connected to the terminal point to point. The user answer data corresponds to the user answering image.

5 The current question data is question data corresponding to a current question and answer data processing process. The current question data may be specifically most recent question data, namely, latest question data. Question data is question data to ask a user. The question data may be specifically text data displayed by using a display, or may be voice information displayed through voice broadcast. The current question data corresponds to the user answer data and the
10 user answering image that are currently fed back by the terminal.

Specifically, the server receives the user answer data and the user answering image that are sent by the terminal through a wireless network or a wired network. The user answer data and the user answering image correspond to the current question data. When receiving the current question data sent by the server, the terminal displays the received current question data to the
15 user through voice broadcast or by using the display, and detects, in real time, the user answer data fed back by the user for the current question data. The terminal obtains the user answering image corresponding to the user answer data, and sends the obtained user answering image and the user answer data to the server.

In an embodiment, the server receives a questioning and answering instruction, obtains the
20 current question data based on the received questioning and answering instruction, and sends the obtained current question data to the terminal. The server selects the current question data from a prestored preset question library based on the questioning and answering instruction. Alternatively, the server may obtain a corresponding question material from a prestored question material set based on the questioning and answering instruction, and generate the current
25 question data based on the obtained question material. The preset question library is a question data set including a plurality of pieces of question data. The question material set is a material set including a plurality of question materials. For example, the question material is an identity card number, a native place, or a current residence.

In an embodiment, the terminal detects an answering operation of the user for the current
30 question data in real time when displaying the current question data to the user, and obtains the user answer data based on the detected answering operation. For example, the answering operation is an entry operation of the user on the terminal or an operation of dictating answer data by

the user.

S204. Determine, in a preset determining manner, whether the user answer data is correct.

The preset determining manner is a preset manner of determining whether the user answer data is correct. The preset determining manner is a basis for determining whether the user answer data is correct. The preset determining manner may be comparing the received user answer data with a prestored preset answer and determining, based on a comparison result, whether the user answer data is correct, in other words, determining correctness of the user answer data. The preset answer is a preset correct answer or standard answer.

Specifically, the server queries the prestored preset answer based on the current question data corresponding to the user answer data, matches the found preset answer with the received user answer data, and determines, based on a matching result, whether the user answer data is correct. The server determines that the user answer data is correct when the matching succeeds; or the server determines that the user answer data is incorrect when the matching fails. The server may calculate a match rate between the preset answer and the user answer data. When the calculated match rate reaches a preset match rate threshold, the server determines that the user answer data successfully matches the preset answer.

In an embodiment, when the user answer data is text data, the server matches the received text data with the found preset answer to determine correctness of the text data. In an embodiment, when the user answer data is voice information, the server performs speech recognition on the voice information to obtain corresponding voice text content, matches the recognized voice text content with the preset answer to determine correctness of the voice text content, and then determines correctness of the voice information.

S206. Determine a target expression score corresponding to the user answering image in a preset expression score determining manner when determining that the user answer data is correct.

The preset expression score determining manner is a preset manner used to determine the target expression score based on the user answering image. The preset expression score determining manner may be specifically extracting a corresponding user micro-expression from the user answering image and determining the target expression score corresponding to the user answering image based on the extracted user micro-expression by using a micro-expression recognition technology. The target expression score is a corresponding user expression score

determined based on the user answering image corresponding to the user answer data. The target expression score may be specifically a corresponding user expression score determined based on the user micro-expression included in the user answering image. The target expression score may be used to represent a possibility that the user actually knows a correct answer corresponding to the current question data. A higher target expression score indicates a higher possibility that the user actually knows the correct answer. In other words, the target expression score may be determined based on the user micro-expression, and may be used to represent the possibility that the user actually knows the correct answer corresponding to the current question data. The target expression score may be used to determine, when the user answers the current question data, whether the user gives an answer because the user actually knows the correct answer or the user gives an answer through guessing because the user actually does not know the correct answer. The target expression score may be a score corresponding to the user micro-expression, for example, 80 points. Alternatively, the target expression score may be a percentage corresponding to the user micro-expression, for example, 80%. When the target expression score is 80%, it may indicate that the possibility that the user actually knows the correct answer is 80%.

The user micro-expression (micro-expression) is a very transitory human facial expression that cannot be autonomously controlled, and is a very transitory expression lasting only 1/25 seconds to 1/5 seconds. The user micro-expression cannot be hidden or disguised by a human being, and is a facial expression that can reflect an authentic emotion of a person. Based on the user micro-expression, whether the user answers a question directly, hesitantly, or the like may be determined.

Specifically, the server extracts the user micro-expression from the user answering image corresponding to the user answer data when determining that the user answer data is correct, and determines the target expression score corresponding to the user answering image based on the extracted user micro-expression by using the micro-expression recognition technology. The server inputs the user answering image to a pre-trained micro-expression recognition model for prediction, to obtain the user micro-expression. The server inputs the predicted user micro-expression to a trained expression score prediction model, to obtain a corresponding target expression score, in other words, to obtain the target expression score corresponding to the user answering image.

In an embodiment, the server inputs the user answering image to the trained prediction model when determining that the user answer data is correct, to obtain the target expression

score.

S208. Determine target question data in a preset question data determining manner corresponding to the target expression score.

5 The target question data is next question data to ask the user. The target question data is another piece question data following the current question data. The target question data may be specifically text data that can be displayed by using the display, or may be voice information that can be displayed through voice broadcast. The preset question data determining manner is a preset manner used to determine the target question data based on the target expression score. The preset question data determining manner corresponds to the target expression score. The
10 preset question data determining manner may be specifically randomly selecting the target question data from the preset question library, or may be determining the target question data based on the current question data.

Specifically, the server determines the preset question data determining manner based on the determined target expression score, and determines the target question data in the determined
15 preset question data determining manner. The server prestores correspondences between target expression scores and preset question data determining manners. The server queries the correspondences between target expression scores and corresponding preset question data determining manners based on the target expression score, and determines the preset question data determining manner corresponding to the target expression score based on a found
20 correspondence. The server may select target question data of a preset type from the prestored preset question library in the preset question data determining manner. Alternatively, the server may determine, in the preset question data determining manner based on the current question data and a constructed knowledge graph, the target question data related to the current question data.

25 In an embodiment, the server prestores correspondences between preset expression score intervals and preset question data determining manners. The server matches the target expression score with a prestored preset expression score interval, and determines a preset question data determining manner corresponding to a successfully matched preset expression score interval as the preset question data determining manner corresponding to the target
30 expression score. The server matches the target expression score with each expression score in the preset expression score interval to determine whether the target expression score falls within the preset expression score interval, and then determines a matching result between the target

expression score and the preset expression score interval.

In an embodiment, the server may select the target question data from the preset question library. Alternatively, the server may obtain a corresponding question material from the prestored question material set, and generate the target question data based on the obtained
5 question material. The target question data may be or may not be related to the current question data. The target question data and the current question data may correspond to a same question type or different question types. A question type corresponding to the target question data may be specifically determined based on a question type corresponding to the current question data, the target expression score, and the preset question data determining manner.

10 S210. Send the target question data to the terminal for display.

Specifically, after determining the target question data in the preset question data determining manner corresponding to the target expression score, the server sends the determined target question data to the terminal. The terminal displays the received target question data to the user by using the display or through voice broadcast.

15 In an embodiment, when displaying the received target question data to the user through voice broadcast or by using the display, the terminal detects, in real time, corresponding user answer data fed back by the user for the target question data, and sends the detected user answer data to the server, so that the server continues to perform related steps of the question and answer data processing method based on the received user answer data.

20 In the question and answer data processing method, the user answer data and the user answering image that are fed back by the terminal for the current question data are received, correctness of the user answer data is determined, and a corresponding step is performed based on the correctness of the user answer data, thereby increasing question and answer data processing efficiency. The target expression score corresponding to the user answering image is
25 determined when it is determined that the user answer data is correct, the next target question data is determined based on the target expression score, and the determined target question data is sent to the terminal for display, so that the terminal initiates a next questioning and answering procedure. In this way, the target question data corresponding to the next questioning and answering procedure is determined with reference to the user answer data and the user
30 answering image, thereby increasing question and answer data processing accuracy in the current questioning and answering procedure.

In an embodiment, the user answering image includes a user answering picture, and step S206 includes: obtaining a corresponding user answering picture based on the user answering image when determining that the user answer data is correct; inputting the user answering picture to the pre-trained micro-expression recognition model for prediction, to obtain the user micro-expression; and inputting the user micro-expression to the pre-trained expression score prediction model, to obtain the target expression score.

The user answering picture is the picture that includes the face picture of the user and that is collected when the user answers the question. The face picture of the user is a picture that includes a face of the user. The face picture of the user may be specifically a user profile photo or a user head shot collected when the user performs the answering operation. The micro-expression recognition model is a model that is obtained through model training based on a pre-obtained training sample set and that can be used to predict an unknown user micro-expression based on a known user answering picture. The expression score prediction model is a model that is obtained through model training based on a pre-obtained training sample set and that can be used to predict an unknown target expression score based on a known user micro-expression.

Specifically, the server obtains the user answering picture from the user answering image corresponding to the user answer data when determining that the user answer data is correct. The server uses the obtained user answering picture as an input feature, inputs the obtained user answering picture to the pre-trained micro-expression recognition model, and performs prediction for the input user answering picture by using the micro-expression recognition model, to obtain the user micro-expression. The server inputs the user micro-expression predicted by using the micro-expression recognition model to the pre-trained expression score prediction model, and performs prediction for the user micro-expression by using the expression score prediction model, to obtain the target expression score.

In an embodiment, the server obtains a first training sample set, and the first training sample set includes a target user answering picture and a target user micro-expression corresponding to the target user answering picture. There are a plurality of target user answering pictures, and each target user answering picture corresponds to a target user micro-expression. The server trains an initialized micro-expression recognition model by using each user answering picture in the first training sample set as an input feature and using a corresponding target user micro-expression as an expected output feature, to obtain the trained micro-expression recognition model. The server may obtain a plurality of target user answering

images, and obtain a corresponding target user answering picture from each target user answering image.

In an embodiment, the server obtains a second training sample set, and the second training sample set includes a target user micro-expression and a target expression score corresponding to the target user micro-expression. There are a plurality of target user micro-expressions, and each target user micro-expression corresponds to a corresponding target expression score. The server trains an initialized expression score prediction model by using each target user micro-expression in the second training sample set as an input feature and using a corresponding target expression score as an expected output feature, to obtain the trained expression score prediction model. The server may obtain a plurality of target user answering pictures, and extract a corresponding target user micro-expression from each target user answering picture by using the trained micro-expression recognition model.

In an embodiment, the user answering image includes a plurality of frames of user answering pictures. The server obtains the plurality of frames of user answering pictures from the user answering image when determining that the user answer data is correct. The server inputs each frame of user answering picture to the trained micro-expression recognition model for prediction, to obtain a corresponding user micro-expression, and inputs each predicted user micro-expression to the trained expression score prediction model, to obtain a corresponding expression score. The server determines the target expression score corresponding to the user answering image based on the expression score corresponding to each frame of user answering picture. For example, the server may weigh the expression score corresponding to each frame of user answering picture to obtain the target expression score.

In the foregoing embodiment, the target expression score is obtained by using the trained micro-expression recognition model and the trained expression score prediction model based on the user answering picture included in the user answering image. In this way, target expression score prediction efficiency and accuracy are increased, thereby increasing question and answer data processing efficiency and accuracy.

In an embodiment, the user answering image includes the user answering video, and step S206 includes: obtaining a corresponding user answering video based on the user answering image when determining that the user answer data is correct; extracting a preset quantity of video frames from the user answering video in a preset extraction manner; determining an expression score corresponding to each of the video frames; and determining the target

expression score corresponding to the user answering image based on each expression score.

The user answering video is the video collected in the answering process of the user, namely, a video collected when the user performs the answering operation. The video frame is a basic component unit of the user answering video. One video frame corresponds to one static picture in the video, and a plurality of video frames constitute the video. The preset quantity is a preset numerical value, and may be customized as required, for example, 3. The preset extraction manner is a preset manner of extracting the preset quantity of video frames from the user answering video. The preset extraction manner is used to instruct the server how to extract the preset quantity of video frames from the user answering video. The preset extraction manner may be obtaining the preset quantity of consecutive video frames from the user answering video, or may be obtaining the preset quantity of video frames based on a preset step.

Specifically, the server obtains the user answering video from the user answering image corresponding to the user answer data when determining that the user answer data is correct. The server extracts the preset quantity of video frames from the obtained user answering video in the preset extraction manner, and performs prediction for each video frame in the foregoing manner by using the trained micro-expression recognition model and the trained expression score prediction model, to obtain the expression score corresponding to each video frame. The server determines the target expression score corresponding to the user answering image based on the expression score corresponding to each of the preset quantity of video frames. The server may weigh the expression score corresponding to each video frame to obtain the target expression score. Alternatively, the server may use the expression score corresponding to each video frame as an input feature, and input the expression score to the pre-trained score prediction model, to obtain the target expression score.

In an embodiment, the server obtains the preset quantity of consecutive video frames from the user answering video. In an embodiment, the server obtains the preset quantity of video frames from the user answering video based on the preset step. An interval between any two adjacent video frames in the preset quantity of obtained video frames is the preset step. The preset step refers to an interval between two obtained adjacent video frames. The preset step may be specifically a specified quantity of video frames, for example, five frames. The server obtains one video frame at an interval of the specified quantity of video frames in the user answering video until the preset quantity of video frames are obtained.

In the foregoing embodiment, the server extracts the preset quantity of video frames from

the user answering video, and determines the target expression score with reference to the expression score corresponding to each of the preset quantity of video frames. In this way, accuracy of the target expression score is increased, thereby increasing question and answer data processing accuracy.

- 5 In an embodiment, step S208 includes: comparing the target expression score with a preset expression score; and selecting target question data of a preset question type from the preset question library when the target expression score reaches the preset expression score.

10 The preset expression score is a preset expression score threshold, for example, 86 points or 86%. The preset expression score is a basis for determining the preset question data determining manner based on the target expression score. The preset question type is a question type that is set in advance. A question type is a type corresponding to question data, for example, an identity type or an address type. For example, question data of the identity type is “what are the last six digits of your identity card number?” For example, question data of the address type is “where do you currently live?”

- 15 Specifically, the server compares the determined target expression score with the preset expression score. When the target expression score reaches the preset expression score, it indicates that the user has a normal expression in the answering process, in other words, it may be determined, based on the user answering image, that the user actually knows the correct answer to the current question data, which further verifies correctness of the user answer data,
20 and the server selects the target question data of the preset question type from the prestored preset question library.

- 25 In an embodiment, one or more question types corresponding to a questioning and answering session are locally configured in the server. For the plurality of preconfigured question types, a questioning and answering sequence corresponding to the plurality of question types in a questioning and answering procedure is locally preconfigured in the server. For example, question data of the address type is followed by question data of the identity type. If the question type corresponding to the current question data is the address type, when a target expression score corresponding to the current question data reaches the preset expression score, the server determines, based on the preconfigured questioning and answering sequence, that the
30 question type corresponding to the target question data is the identity type. In this case, the server selects question data of the identity type from the preset question library, and selects the target question data from the selected question data.

In an embodiment, the preset question type corresponding to the target question data is different from the question type corresponding to the current question data.

In the foregoing embodiment, when it is determined, based on both the user answer data and the user answering image, that the user answer data fed back by the user for the current question data is correct, another piece of question data of the preset question type is selected to ask the user, to reduce a quantity of pieces of question data. In this way, a quantity of pieces of question and answer data processed in the entire questioning and answering procedure is reduced, thereby increasing question and answer data processing efficiency.

In an embodiment, the user answer data and the user answering image correspond to the current question data, and step S208 includes: comparing the target expression score with a preset expression score; and selecting target question data corresponding to the current question data based on the current question data in a preset selection manner when the target expression score is less than the preset expression score.

The preset selection manner is a preset manner used to select the target question data based on the current question data. The preset selection manner may be specifically selecting the target question data related to the current question data from the preset question library, or selecting the target question data based on the constructed knowledge graph. The target question data selected in the preset selection manner and the current question data may correspond to a same question type or different question types.

Specifically, the server compares the target expression score corresponding to the user answering image with the preset expression score. The server selects the target question data related to the current question data in the preset selection manner based on the current question data corresponding to the user answer data and the user answering image when the target expression score is less than the preset expression score. The server may select the target question data related to the current question data from the preset question library based on the current question data. Alternatively, the server may select the related target question data from the constructed knowledge graph based on the current question data. The current question data and the determined target question data may correspond to a same keyword or homologous keywords, for example, a same address or similar addresses.

In an embodiment, the server selects the target question data related to the user answer data in the preset selection manner based on the user answer data corresponding to the current question data when the target expression score is less than the preset expression score. For

example, if the current question data is "where do you currently live?", the received user answer data is "I currently lives at No. 28, Keyuan Road, Nanshan District, Shenzhen". When the target expression score is less than the preset expression score, the server may select the target question data based on the address in the user answer data, namely, "No. 28, Keyuan Road, Nanshan District, Shenzhen", for example, "is there a merchant bank within 50 meters from No. 28, Keyuan Road, Nanshan District, Shenzhen"?

In an embodiment, the preset question library is a question library preconfigured in a database. The constructed knowledge graph is a graph-based data structure constructed in advance in a knowledge graph construction manner. The knowledge graph may be constructed based on a known knowledge graph construction manner. Details are not described herein.

In the foregoing embodiment, when it is determined that the user answer data is correct, and it is determined, based on the user answering image, that the user answer data is possibly incorrect, the target question data related to the current question data is selected, to determine correctness of the current question data based on the target question data. In this way, identity reliability of the user who currently performs the answering operation is verified, to ensure question and answer data processing accuracy.

In an embodiment, the user answer data and the user answering image correspond to the current question data, the current question data corresponds to a preset comprehensive score, and the question and answer data processing method further includes: dynamically adjusting the preset comprehensive score in a preset score adjustment manner when the target expression score is less than the preset expression score; and determining a comprehensive score corresponding to the target question data based on the preset comprehensive score and an adjusted preset comprehensive score.

The preset comprehensive score is a comprehensive score that is set in advance and corresponds to the current question data. The preset comprehensive score includes the preset expression score and a preset answer score. The preset comprehensive score may be understood as a full score corresponding to the current question data. The preset answer score may be understood as a full score corresponding to the user answer data. For example, when the user answer data fed back by the user for the current question data is consistent with the correct answer, the target answer data is determined as a full score, to be specific, the preset answer score is determined as a target answer score. Similarly, the preset expression score may be understood as a full score corresponding to the user answering image.

Specifically, the server dynamically adjusts, in the preset score adjustment manner, the preset comprehensive score corresponding to the current question data corresponding to the user answer data and the user answering image when the target expression score is less than the preset expression score. The server determines the comprehensive score corresponding to the target question data based on the adjusted preset comprehensive score and the preset comprehensive score corresponding to the current question data. The server dynamically transfers a part of the preset comprehensive score corresponding to the current question data to the target question data when determining that the user answer data may be incorrect based on the user answering image.

In an embodiment, the preset comprehensive score includes the preset expression score and the preset answer score. The server determines the preset expression score corresponding to the current question data as the comprehensive score corresponding to the target question data when the target expression score is less than the preset expression score. In addition, the server determines the preset answer score corresponding to the current question data as the adjusted preset comprehensive score. The server may determine, based on a score ratio of the preset expression score to the preset answer score in the preset comprehensive score corresponding to the current question data, a corresponding expression score and a corresponding answer score in the comprehensive score corresponding to the target question data.

In an embodiment, the server determines a target answer score based on the user answer data when the target expression score is less than the preset expression score, determines a corresponding target comprehensive score based on the target answer score and the target expression score, and then determines the determined target comprehensive score as the comprehensive score corresponding to the target question data.

In an embodiment, when the target expression score is less than the preset expression score, the server separately determines, based on a preset score ratio and the preset comprehensive score corresponding to the current question data, a comprehensive score corresponding to the current question data and a comprehensive score corresponding to the dynamically adjusted target question data. For example, if the preset score ratio is 3:2, after the dynamical adjustment, a ratio of the comprehensive score corresponding to the current question data to the comprehensive score corresponding to the target question data is 3:2. Assuming that the preset comprehensive score is 50 points, the adjusted preset comprehensive score that is determined based on the preset score ratio and that corresponds to the current question data is 30 points, and the adjusted comprehensive score that is determined based on the preset score ratio and that

corresponds to the target question data is 20 points.

In an embodiment, a quantity of pieces of question data involved in the questioning and answering session and a preset comprehensive score corresponding to each piece of question data are locally preconfigured in the server.

5 In an embodiment, a plurality of question types corresponding to the questioning and answering session and a preset comprehensive score corresponding to each question type are locally preconfigured in the server. All the question types may correspond to a same preset comprehensive score or different preset comprehensive scores. A higher preset comprehensive score may be configured for a compulsory question type, for example, the identity type. In the
10 questioning and answering session, when question data of a specific question type is selected for the first time, the server determines a preset comprehensive score corresponding to the question type as a preset comprehensive score corresponding to the question data of the question type.

In the foregoing embodiment, when it is determined, based on the user answering image, that the user answer data is possibly incorrect, the preset comprehensive score corresponding to
15 the current question data is dynamically adjusted, and the comprehensive score corresponding to the target question data is determined, so that a final target comprehensive score corresponding to the current question data is determined based on target comprehensive scores corresponding to the target question data and the current question data. In this way, accuracy of the target comprehensive score is increased, thereby increasing question and answer data processing
20 accuracy.

In an embodiment, before step S208, the question and answer data processing method further includes: determining a target answer score corresponding to the user answer data in a preset answer score determining manner; determining a corresponding target comprehensive score based on the target answer score and the target expression score; updating a corresponding
25 existing total answer score based on the target comprehensive score; and stopping the current questioning and answering procedure when an updated total answer score meets a preset stop condition, and sending corresponding prompt information to the terminal.

The preset answer score determining manner is a predetermined manner of determining the target answer score based on the user answer data. The preset answer score determining
30 manner may be determining the target answer score based on the match rate between the user answer data and the preset answer and the preset answer score corresponding to the current question data. For example, if the preset comprehensive score is 50 points, and the calculated

match rate is 80%, the determined target answer score is 40 points. The preset answer score determining manner may be inputting the user answer data to a pre-trained answer score prediction model, to obtain the target answer score.

The existing total answer score is a corresponding total score determined based on a target comprehensive score corresponding to one or more pieces of question data before the current question data. The target comprehensive score corresponding to the one or more pieces of question data and a target comprehensive score corresponding to the current question data correspond to a same user identifier. In other words, the target comprehensive score corresponding to the current question data and the target comprehensive score corresponding to the one or more pieces of question data before the current question data each is a corresponding answer score determined based on corresponding user answer data and a corresponding user answering image that are fed back by the same user for the question data. The total answer score may be a corresponding total score determined based on target comprehensive scores corresponding to a plurality of pieces of question data. The total answer score may be a total score obtained by directly totaling up or performing weighted summation on the plurality of target comprehensive scores. The preset stop condition is a preset basis for determining whether to stop the current questioning and answering procedure. The preset stop condition may be specifically that the updated total answer score reaches a preset total score threshold.

Specifically, the server determines the target answer score based on the user answer data in the preset answer score determining manner, and totals up the target answer score and the target expression score to obtain the target comprehensive score. The server queries the existing total answer score based on a user identifier corresponding to the user answer data and the user answering image, and updates the found total answer score based on the target comprehensive score corresponding to the current question data. The server compares the updated total answer score with the preset total score threshold. When the updated total answer score reaches the preset total score threshold, the server stops the current questioning and answering procedure, and does not perform the related step of determining the target question data in the preset question data determining manner corresponding to the target expression score. The server generates the prompt information based on the updated total answer score, and sends the prompt information to the terminal.

For example, if the current question data is third question data answered by the user, the target comprehensive score that corresponds to the third question data and that is determined in the foregoing manner is 20 points, and target comprehensive scores corresponding to first

question data and second question data are 30 points and 20 points, the total answer score is 50 points, and the updated total answer score is 70 points. Assuming that the preset total score threshold is 60 points, the updated total answer score is greater than the preset total score threshold, which meets the preset stop condition.

- 5 In an embodiment, the server directly totals up or performs weighted summation on the target answer score and the target expression score to obtain the target comprehensive score. A weight for weighted summation may be customized.

10 In an embodiment, when the question and answer data processing method in the foregoing embodiments is applied to a questioning and answering session in a face-to-face loan review process, the server stops a corresponding questioning and answering procedure, and pushes prompt information indicating that the face-to-face review succeeds to the terminal. The face-to-face review is reviewing a user identity in a loan service processing process.

15 In an embodiment, the server counts a total quantity of pieces of question data, and compares the counted total quantity with a preset quantity threshold. When the counted total quantity reaches the preset quantity threshold, the server stops the current questioning and answering procedure, updates the existing total answer score based on the target comprehensive score corresponding to the current question data, and then pushes the prompt information to the terminal based on the updated total answer score and the preset total score threshold. The server sends the prompt information indicating that the face-to-face review succeeds to the terminal

20 when the updated total answer score reaches the preset total score threshold. The server sends prompt information indicating that the face-to-face review fails to the terminal when the updated total answer score is less than the preset total score threshold.

25 In an embodiment, the server may determine that the preset answer score is the target comprehensive score when determining that the user answer data is correct. The server may determine that the target answer score is zero when determining that the user answer data is incorrect.

30 In an embodiment, the server may stop the current questioning and answering procedure when determining that the user answer data corresponding to the current question data is incorrect, and send the prompt information to the terminal. Alternatively, the server may select the target question data of the preset question type from the preset question library, and continue to perform the current questioning and answering procedure based on the selected target question data in the foregoing manner. The server counts a total quantity of pieces of question

data corresponding to incorrect user answer data. The server stops the current questioning and answering procedure when the counted total quantity reaches a preset total quantity, and sends the prompt information to the terminal.

In an embodiment, the server receives user answer voice information sent by the terminal, performs voiceprint recognition on the user answer voice information to obtain a voiceprint feature, and then verifies an identity of the user based on the voiceprint feature. Voiceprint recognition may be implemented based on various existing voiceprint recognition technologies. Details are not described herein. The server obtains the user answer voice information from the terminal when determining, based on the user answer data and the user answering image, that the user answer data of the user for the current question data is correct.

In an embodiment, the server obtains a tone and an intonation of the user from the user answer voice information, and then verifies correctness of the user answer data based on the obtained tone and intonation.

As shown in FIG. 3, in an embodiment, a question and answer data processing method is provided. The method specifically includes the following steps:

S302. Receive user answer data and a user answering image that are sent by a terminal.

S304. Determine, in a preset determining manner, whether the user answer data is correct.

S306. Obtain a corresponding user answering picture based on the user answering image when determining that the user answer data is correct.

S308. Input the user answering picture to a pre-trained micro-expression recognition model for prediction, to obtain a corresponding user micro-expression.

S310. Input the user micro-expression to a pre-trained expression score prediction model, to obtain a target expression score.

S312. Obtain a corresponding user answering video based on the user answering image when determining that the user answer data is correct.

S314. Extract a preset quantity of video frames from the user answering video in a preset extraction manner.

S316. Determine an expression score corresponding to each of the video frames.

S318. Determine a corresponding target expression score corresponding to the user

answering image based on each expression score.

S320. Determine a target answer score corresponding to the user answer data in a preset answer score determining manner.

S322. Determine a corresponding target comprehensive score based on the target answer score and the target expression score.

S324. Update an existing total answer score based on the target comprehensive score.

S326. Stop a current questioning and answering procedure when an updated total answer score meets a preset stop condition, and send prompt information to the terminal.

S328. Compare the target expression score with a preset expression score.

S330. Select target question data of a preset question type from a preset question library when the target expression score reaches the preset expression score.

S332. Select target question data corresponding to current question data based on the current question data in a preset selection manner when the target expression score is less than the preset expression score, where the user answer data and the user answering image correspond to the current question data.

S334. Send the target question data to the terminal for display.

In the foregoing embodiment, correctness of the user answer data is verified by using the user answering image. The target question data is determined based on the target expression score corresponding to the user answering image when it is verified that the user answer data is correct, thereby increasing question and answer data processing accuracy. Further, whether to stop the current questioning and answering procedure is determined based on the total answer score, thereby increasing question and answer data processing efficiency.

It should be understood that although the steps in the flowcharts in FIG. 2 and FIG. 3 are shown in a sequence indicated by the arrows, these steps are not necessarily performed in such a sequence. Unless expressly stated in the present specification, there is no strict limitation on the execution sequence of these steps, and these steps may be performed in another sequence. In addition, at least some of the steps in FIG. 2 and FIG. 3 may include a plurality of sub-steps or stages. These sub-steps or stages are not necessarily performed at a same moment, and may be performed at different moments. These sub-steps or stages are not necessarily performed in sequence, and may be alternately performed with other steps or at least some of sub-steps or

stages of other steps.

In an embodiment, as shown in FIG. 4, a question and answer data processing apparatus 400 is provided, and includes a receiving module 402, a determining module 404, a score
5 determining module 406, a question data determining module 408, and a sending module 410.

The receiving module 402 is configured to receive user answer data and a user answering image that are sent by a terminal.

The determining module 404 is configured to determine, in a preset determining manner, whether the user answer data is correct.

10 The score determining module 406 is configured to determine a target expression score corresponding to the user answering image in a preset expression score determining manner when it is determined that the user answer data is correct.

The question data determining module 408 is configured to determine target question data in a preset question data determining manner corresponding to the target expression score.

15 The sending module 410 is configured to send the target question data to the terminal for display.

In an embodiment, the user answering image includes a user answering picture, and the score determining module 406 is further configured to: obtain a user answering picture based on the user answering image when it is determined that the user answer data is correct; input the
20 user answering picture to a pre-trained micro-expression recognition model for prediction, to obtain a user micro-expression; and input the user micro-expression to a pre-trained expression score prediction model, to obtain the target expression score.

In an embodiment, the user answering image includes a user answering video, and the score determining module 406 is further configured to: obtain a user answering video based on the user answering image when it is determined that the user answer data is correct; extract a
25 preset quantity of video frames from the user answering video in a preset extraction manner; determine an expression score corresponding to each of the video frames; and determine the target expression score corresponding to the user answering image based on each expression score.

30 In an embodiment, the question data determining module 408 is further configured to:

compare the target expression score with a preset expression score; and select target question data of a preset question type from a preset question library when the target expression score reaches the preset expression score.

In an embodiment, the user answer data and the user answering image correspond to current question data, and the question data determining module 408 is further configured to: compare the target expression score with a preset expression score; and select target question data corresponding to the current question data based on the current question data in a preset selection manner when the target expression score is less than the preset expression score.

As shown in FIG. 5, in an embodiment, the user answer data and the user answering image correspond to the current question data, the current question data corresponds to a preset comprehensive score, and the question and answer data processing apparatus 400 further includes a score adjustment module 412.

The score adjustment module 412 is configured to: dynamically adjust the preset comprehensive score in a preset score adjustment manner when the target expression score is less than the preset expression score; and determine a comprehensive score corresponding to the target question data based on the preset comprehensive score and an adjusted preset comprehensive score.

In an embodiment, the question and answer data processing apparatus 400 further includes a total score update module 414.

The total score update module 414 is configured to: determine a target answer score corresponding to the user answer data in a preset answer score determining manner; determine a corresponding target comprehensive score based on the target answer score and the target expression score; update a corresponding existing total answer score based on the target comprehensive score; and stop a current questioning and answering procedure when an updated total answer score meets a preset stop condition, and send corresponding prompt information to the terminal.

For specific description of the question and answer data processing apparatus, refer to the foregoing description of the question and answer data processing method. All or some of the modules in the question and answer data processing apparatus may be implemented by software, hardware, or a combination thereof. The foregoing modules may be embedded in or independent of a processor of a computer device in a hardware form, or may be stored in a memory of a

computer device in a software form, so that the processor invokes and performs operations corresponding to the foregoing modules.

In one embodiment, a computer device is provided. The computer device may be a server, and an internal structural diagram of the computer device may be shown in FIG. 6. The computer device includes a processor, a memory, a network interface, and a database that are connected to each other by using a system bus. The processor of the computer device is configured to provide computing and control capabilities. The memory of the computer device includes a nonvolatile storage medium and an internal memory. The nonvolatile storage medium stores an operating system, computer readable instructions, and a database. The internal memory provides an environment for running the operating system and the computer readable instructions in the nonvolatile storage medium. The database of the computer device is configured to store a preset answer corresponding to current question data corresponding to user answer data and a user answering image. The network interface of the computer device is configured to communicate with an external terminal through a network. The computer readable instructions are executed by the processor to implement a question and answer data processing method.

A person skilled in the art may understand that the structure shown in FIG. 6 is merely a block diagram of a part of a structure related to the solution of the present application, and constitutes no limitation on the computer device to which the solution of the present application is applied. Specifically, the computer device may include more or fewer components than those shown in the figure, or combine some components, or have different component arrangements.

A computer device includes a memory and one or more processors. The memory stores computer readable instructions. When the computer readable instructions are executed by the one or more processors, the one or more processors are enabled to implement the steps of the question and answer data processing method provided in any one of the embodiments of the present application.

One or more nonvolatile computer readable storage media that store computer readable instructions are provided. When the computer readable instructions are executed by one or more processors, the one or more processors are enabled to implement the steps of the question and answer data processing method provided in any one of the embodiments of the present application.

A person of ordinary skill in the art may understand that all or some of the procedures for implementing the method in the foregoing embodiments may be implemented by computer readable instructions by instructing related hardware. The computer readable instructions may be stored in a nonvolatile computer readable storage medium, and when the computer readable instructions are executed, the procedures in the embodiments of the methods may be performed. Any reference to a memory, a storage, a database or another medium used in the embodiments provided in the present application may include a nonvolatile memory and/or a volatile memory. The nonvolatile memory may include a read-only memory (ROM), a programmable ROM (PROM), an electrically programmable ROM (EPROM), an electrically erasable programmable ROM (EEPROM), or a flash memory. The volatile memory may include a random access memory (RAM) or an external cache memory. As an illustration instead of a limitation, a plurality of forms of RAMs may be obtained, for example, a static RAM (SRAM), a dynamic RAM (DRAM), a synchronous DRAM (SDRAM), a double data rate SDRAM (DDRSDRAM), an enhanced SDRAM (ESDRAM), a synchlink (Synchlink) DRAM (SLDRAM), a rambus (Rambus) direct RAM (RDRAM), a direct rambus dynamic RAM (DRDRAM), and a rambus dynamic RAM (RDRAM).

The technical features of the foregoing embodiments may be combined arbitrarily. For brevity of description, not all possible combinations of the technical features of the foregoing embodiments are described. However, the combinations of these technical features should be considered as falling in the scope of the present specification provided that there is no contradiction between the combinations.

Only several implementations of the present application are described in the foregoing embodiments, and description of the implementations is relatively specific and detailed, but shall not be understood as a limitation on the scope of the present invention. It should be noted that a person of ordinary skill in the art may make several variations and improvements without departing from the concept of the present application, and the variations and the improvements shall fall within the protection scope of the present application. Therefore, the protection scope of the present application shall be subject to the appended claims.

CLAIMS

What is claimed is:

1. A question and answer data processing method, comprising:

receiving user answer data and a user answering image that are sent by a terminal;

determining, in a preset determining manner, whether the user answer data is correct;

determining a target expression score corresponding to the user answering image in a preset expression score determining manner when determining that the user answer data is correct;

determining target question data in a preset question data determining manner corresponding to the target expression score; and

sending the target question data to the terminal for display.
2. The method according to claim 1, wherein the user answering image comprises a user answering picture, and the determining a target expression score corresponding to the user answering image in a preset expression score determining manner when determining that the user answer data is correct comprises:

obtaining a corresponding user answering picture based on the user answering image when determining that the user answer data is correct;

inputting the user answering picture to a pre-trained micro-expression recognition model for prediction, to obtain a corresponding user micro-expression; and

inputting the user micro-expression to a pre-trained expression score prediction model, to obtain the target expression score.
3. The method according to claim 1, wherein the user answering image comprises a user answering video, and the determining a target expression score corresponding to the user answering image in a preset expression score determining manner when determining that the user answer data is correct comprises:

obtaining a corresponding user answering video based on the user answering image when determining that the user answer data is correct;

extracting a preset quantity of video frames from the user answering video in a preset extraction manner;

determining an expression score corresponding to each of the video frames; and

determining the target expression score corresponding to the user answering image based on each expression score.

4. The method according to claim 1, wherein the determining target question data in a preset question data determining manner corresponding to the target expression score comprises:

comparing the target expression score with a preset expression score; and

selecting target question data of a preset question type from a preset question library when the target expression score reaches the preset expression score.

5. The method according to claim 1, wherein the user answer data and the user answering image correspond to current question data, and the determining target question data in a preset question data determining manner corresponding to the target expression score comprises:

comparing the target expression score with a preset expression score; and

selecting target question data corresponding to the current question data based on the current question data in a preset selection manner when the target expression score is less than the preset expression score.

6. The method according to any one of claims 1 to 5, wherein the user answer data and the user answering image correspond to the current question data, the current question data corresponds to a preset comprehensive score, and the method further comprises:

dynamically adjusting the preset comprehensive score in a preset score adjustment manner when the target expression score is less than the preset expression score; and

determining a comprehensive score corresponding to the target question data based on the preset comprehensive score and an adjusted preset comprehensive score.

7. The method according to any one of claims 1 to 5, wherein before the determining target question data in a preset question data determining manner corresponding to the target expression score, the method further comprises:

determining a target answer score corresponding to the user answer data in a preset answer score determining manner;

determining a corresponding target comprehensive score based on the target answer score and the target expression score;

updating a corresponding existing total answer score based on the target comprehensive score; and

stopping a current questioning and answering procedure when an updated total answer score meets a preset stop condition, and sending corresponding prompt information to the terminal.

8. A question and answer data processing apparatus, comprising:

a receiving module, configured to receive user answer data and a user answering image that are sent by a terminal;

a determining module, configured to determine, in a preset determining manner, whether the user answer data is correct;

a score determining module, configured to determine a target expression score corresponding to the user answering image in a preset expression score determining manner when it is determined that the user answer data is correct;

a question data determining module, configured to determine target question data in a preset question data determining manner corresponding to the target expression score; and

a sending module, configured to send the target question data to the terminal for display.

9. A computer device, comprising a memory and one or more processors, wherein the memory stores computer readable instructions, and when the computer readable instructions are executed by the one or more processors, the one or more processors are enabled to perform the following steps:

receiving user answer data and a user answering image that are sent by a terminal;

determining, in a preset determining manner, whether the user answer data is correct;

determining a target expression score corresponding to the user answering image in a preset expression score determining manner when determining that the user answer data is correct;

determining target question data in a preset question data determining manner corresponding to the target expression score; and

sending the target question data to the terminal for display.

10. The computer device according to claim 9, wherein the user answering image comprises a user answering picture, and the determining a target expression score corresponding

to the user answering image in a preset expression score determining manner when determining that the user answer data is correct comprises:

obtaining a corresponding user answering picture based on the user answering image when determining that the user answer data is correct;

inputting the user answering picture to a pre-trained micro-expression recognition model for prediction, to obtain a corresponding user micro-expression; and

inputting the user micro-expression to a pre-trained expression score prediction model, to obtain the target expression score.

11. The computer device according to claim 9, wherein the user answering image comprises a user answering video, and the determining a target expression score corresponding to the user answering image in a preset expression score determining manner when determining that the user answer data is correct comprises:

obtaining a corresponding user answering video based on the user answering image when determining that the user answer data is correct;

extracting a preset quantity of video frames from the user answering video in a preset extraction manner;

determining an expression score corresponding to each of the video frames; and

determining the target expression score corresponding to the user answering image based on each expression score.

12. The computer device according to claim 9, wherein the determining target question data in a preset question data determining manner corresponding to the target expression score comprises:

comparing the target expression score with a preset expression score; and

selecting target question data of a preset question type from a preset question library when the target expression score reaches the preset expression score.

13. The computer device according to claim 9, wherein the user answer data and the user answering image correspond to current question data, and the determining target question data in a preset question data determining manner corresponding to the target expression score comprises:

comparing the target expression score with a preset expression score; and

selecting target question data corresponding to the current question data based on the current question data in a preset selection manner when the target expression score is less than the preset expression score.

14. The computer device according to any one of claims 9 to 13, wherein the user answer data and the user answering image correspond to the current question data, the current question data corresponds to a preset comprehensive score, and when executing the computer readable instructions, the processors further perform the following steps:

dynamically adjusting the preset comprehensive score in a preset score adjustment manner when the target expression score is less than the preset expression score; and

determining a comprehensive score corresponding to the target question data based on the preset comprehensive score and an adjusted preset comprehensive score.

15. The computer device according to any one of claims 9 to 13, wherein when the computer readable instructions are executed by the one or more processors, before the determining target question data in a preset question data determining manner corresponding to the target expression score, the processors are further enabled to perform the following steps:

determining a target answer score corresponding to the user answer data in a preset answer score determining manner;

determining a corresponding target comprehensive score based on the target answer score and the target expression score;

updating a corresponding existing total answer score based on the target comprehensive score; and

stopping a current questioning and answering procedure when an updated total answer score meets a preset stop condition, and sending corresponding prompt information to the terminal.

16. One or more nonvolatile computer readable storage media, storing computer readable instructions, wherein when the computer readable instructions are executed by one or more processors, the processors are enabled to perform the following steps:

receiving user answer data and a user answering image that are sent by a terminal;

determining, in a preset determining manner, whether the user answer data is correct;

determining a target expression score corresponding to the user answering image in a preset

expression score determining manner when determining that the user answer data is correct;

determining target question data in a preset question data determining manner corresponding to the target expression score; and

sending the target question data to the terminal for display.

17. The storage media according to claim 16, wherein the user answering image comprises a user answering picture, and the determining a target expression score corresponding to the user answering image in a preset expression score determining manner when determining that the user answer data is correct comprises:

obtaining a corresponding user answering picture based on the user answering image when determining that the user answer data is correct;

inputting the user answering picture to a pre-trained micro-expression recognition model for prediction, to obtain a corresponding user micro-expression; and

inputting the user micro-expression to a pre-trained expression score prediction model, to obtain the target expression score.

18. The storage media according to claim 16, wherein the user answering image comprises a user answering video, and the determining a target expression score corresponding to the user answering image in a preset expression score determining manner when determining that the user answer data is correct comprises:

obtaining a corresponding user answering video based on the user answering image when determining that the user answer data is correct;

extracting a preset quantity of video frames from the user answering video in a preset extraction manner;

determining an expression score corresponding to each of the video frames; and

determining the target expression score corresponding to the user answering image based on each expression score.

19. The storage media according to claim 16, wherein the determining target question data in a preset question data determining manner corresponding to the target expression score comprises:

comparing the target expression score with a preset expression score; and

selecting target question data of a preset question type from a preset question library when the target expression score reaches the preset expression score.

20. The storage media according to claim 16, wherein the user answer data and the user answering image correspond to current question data, and the determining target question data in a preset question data determining manner corresponding to the target expression score comprises:

comparing the target expression score with a preset expression score; and

selecting target question data corresponding to the current question data based on the current question data in a preset selection manner when the target expression score is less than the preset expression score.