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ELECTRONIC APPARATUS AND GAME ASSISTANCE METHOD

Abstract

An electronic apparatus and a game assistance method are provided. The game assistance method is adapted to the electronic apparatus. The method includes the following steps. A game application is executed, and a game screen of the game application is displayed. Text in the game screen is recognized. A target string is generated based on the recognized text. The target string is inputted into an application, and a floating window of the application is overlapped and displayed on the game screen through the display device.

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Background/Summary

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims the priority benefit of Taiwan application serial no. 113106058, filed on Feb. 21, 2024. The entirety of the above-mentioned patent application is hereby incorporated by reference herein and made a part of specification.

BACKGROUND

Technical Field

[0002] The disclosure relates to an electronic apparatus and a game assistance method.

Description of Related Art

[0003] With the advancement of technology, electronic apparatuses have become indispensable items due to their powerful performance and rich applications in the daily lives of modern people. For instance, using electronic apparatuses to play games has become a popular pastime. As the performance of electronic apparatuses improves day by day, game play methods and game types become increasingly diverse. At present, when a game player fails to pass a level in a specific game or is stuck at a level, the player has to stop the game first to search for the game walkthrough of the game most of the time before continuing with the game based on the searched game walkthrough. In other words, the act of searching for game walkthroughs will obviously interrupt the immersion of games. Further, game players have to enter keywords to query game walkthroughs through typing by themselves, so game players may have to switch back and forth between the game screen and the query screen to ensure that the query keywords meet expectations.

SUMMARY

[0004] The disclosure provides a game assistance method adapted to an electronic apparatus including a display device. The method includes the following steps. A game application is executed, and a game screen of the game application is displayed. Text in the game screen is recognized. A target string is generated based on the recognized text. The target string is inputted into an application, and a floating window of the application is overlapped and displayed on the game screen through the display device.

[0005] The disclosure further provides an electronic apparatus including a display device, a storage device, and a processor. The storage device records a plurality of modules. The processor is coupled to the display device and the storage device, executes the modules, and is configured to execute the following steps. A game application is executed, and a game screen of the game application is displayed. Text in the game screen is recognized. A target string is generated based on the recognized text. The target string is inputted into an application, and a floating window of the application is overlapped and displayed on the game screen through the display device.

[0006] To sum up, in the embodiments of the disclosure, when running the game application, the text in the game screen is recognized. The target string generated based on the recognized text is inputted into the application, and the floating window of the application receiving the target string is overlapped and displayed on the game screen. Therefore, without interrupting the gaming experience, the electronic apparatus may use the text appearing on the game screen to implement specific functions, thus allowing a user to obtain a favorable gaming experience.

[0007] To make the aforementioned more comprehensible, several embodiments accompanied with drawings are described in detail as follows.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] The accompanying drawings are included to provide a further understanding of the

disclosure, and are incorporated in and constitute a part of this specification. The drawings illustrate exemplary embodiments of the disclosure and, together with the description, serve to explain the principles of the disclosure.

[0009] FIG. **1** is a schematic view of an electronic apparatus according to an embodiment of the disclosure.

[0010] FIG. **2** is a flow chart of a game assistance method according to an embodiment of the disclosure.

[0011] FIG. **3** is a schematic view of a game screen and a floating window according to an embodiment of the disclosure.

[0012] FIG. **4** is a flow chart of a game assistance method according to an embodiment of the disclosure.

[0013] FIG. **5A** is a schematic view of providing a text mark box and a candidate word list according to an embodiment of the disclosure.

[0014] FIG. **5B** is a schematic view of determining a target string according to a user selection command according to an embodiment of the disclosure.

[0015] FIG. **5C** is a schematic view of superimposing and displaying the floating window including a walkthrough search result on the game screen according to an embodiment of the disclosure.

[0016] FIG. **5D** is a schematic view of a prompt message for copying target text according to an embodiment of the disclosure.

DESCRIPTION OF THE EMBODIMENTS

[0017] Descriptions of the disclosure are given with reference to the exemplary embodiments illustrated by the accompanying drawings. Wherever possible, the same reference numbers are used in the drawings and the description to refer to the same or like parts. These embodiments are only part of the disclosure and do not present all implementation of the disclosure. More specifically, these embodiments serve as examples of the apparatus and method fall within the scope of the claims of the disclosure.

[0018] With reference to FIG. **1**, a display apparatus **100** of this embodiment is, for example, a smart phone, a tablet computer, a notebook computer, or a desktop computer that can execute game applications, but the disclosure is not limited thereto. The electronic apparatus **100** includes a display device **110**, an input device **120**, a storage device **130**, and a processor **140**, and functions of these devices are described in the following paragraphs.

[0019] The display device **110** is used to display an image to a user. The display device **110** is, for example, a liquid crystal display (LCD), a light-emitting diode (LED) display, a field emission display (FED), an organic light-emitting diode (OLED) display, or other types of display devices, but the disclosure is not limited thereto.

[0020] The input device **120** is used to receive a user command inputted by the user. The input device **120** is, for example, a touch panel, a keyboard, a mouse, a microphone, a game controller, or other types of command input devices, but the disclosure is not limited thereto. In some embodiments, the touch panel and the display device **110** may be integrated into a touch screen.

[0021] The storage device **130** is used to store data such as a file, an image, a command, a program code, a software module, etc., and may be, for example, a fixed or movable random access memory (RAM) in any form, a read-only memory (ROM), a flash memory, a hard disc or other similar devices, an integrated circuit, and a combination thereof.

[0022] The processor **140** is, for example, a central processing unit (CPU), an application processor (AP), a programmable microprocessor for general or special use, a digital signal processor (DSP), a programmable controller, an application specific integrated circuit (ASIC), a programmable logic device (PLD), a graphics processing unit (GPU) or other similar devices, or a combination of the foregoing devices. The processor **140** may execute a program code, a software module, a command, etc. recorded in the storage device **130** to implement a game assistance method provided by the embodiments of the disclosure. The software module may be broadly construed to mean a

command, a command set, a code, a program code, a program, an application, a software package, a thread, a procedure, a function, etc.

[0023] FIG. 2 is a flow chart of a game assistance method according to an embodiment of the disclosure. With reference to FIG. 1 and FIG. 2, the method provided by this embodiment is applicable to the electronic apparatus **100** provided by the foregoing embodiments, and steps of the game assistance method provided by this embodiment are described in detail as follows together with the various devices in the electronic apparatus **100**.

[0024] In step S210, the processor **140** executes a game application and controls the display device **110** to display a game screen of the game application. To be specific, when the game application is executed, the display device **110** displays the game screen of the game application.

[0025] In step S220, the processor **140** recognizes text in the game screen. Generally, the game screen may include permanent static text, dynamic text for conditional prompts, or a combination thereof. The processor **140** can capture the game screen displayed by the display device **110** and use text recognition technology to perform text recognition on the game screen. The abovementioned text recognition technology is, for example, optical character recognition (OCR) technology. After performing text recognition on the game screen, the processor **130** may obtain the text in the game screen. In different embodiments, the processor **130** may perform text recognition on a complete region or a partial region of the game screen. The abovementioned partial region may be predetermined or set by the user.

[0026] In step S230, the processor **140** generates a target string according to the recognized text. In some embodiments, the processor **140** may treat all recognized text as the target string.

Alternatively, in some embodiments, the processor **140** may use a portion of the recognized text as the target string. For instance, the processor **140** may select a portion of the recognized text as the target string according to a predetermined rule or based on the user command. In addition, in some embodiments, the processor **140** may further add other words that do not appear in the game screen to generate the target string.

[0027] In step S240, the processor **140** inputs the target string into an application and overlaps and displays a floating window of the application on the game screen through the display device **110**.

The application may include a browser, an instant messaging program, a document editing program, a drawing program, a clipboard application, or other applications that allow text input. For instance, the processor **140** may input the target string into a search engine of the browser, so that the search engine of the browser performs webpage search based on the target string.

Alternatively, the processor **140** may input the target string into a conversation input field of the instant messaging program, so that the instant messaging program sends the target string to the conversation partner. Alternatively, the processor **140** may copy the target string directly into a document file of the document editing program.

[0028] It is worth mentioning that when the processor **140** inputs the target string into the application, the processor **140** may overlap and display the floating window of the application on the game screen through the display device **110**. To be specific, when the processor **140** inputs the target string into an application by using an application programming interface (API), the processor **140** may overlap and display the floating window of the application on the game screen. For instance, the processor **140** may overlap and display the floating window of the browser on the game screen, and the floating window of the browser may include a web search result corresponding to the target text. Alternatively, the processor **140** may overlap and display a floating window of the instant messaging program on the game screen, and the floating window of the instant messaging program presents conversation content including the target text. Still alternatively, the processor **140** may overlap and display a floating window of the document editing program on the game screen, and the floating window of the document editing program presents the a document including the target text.

[0029] For instance, with reference to FIG. 3, which is a schematic view of a game screen and a

floating window according to an embodiment of the disclosure. When the processor **140** executes the game application, the display device **110** displays a game screen **F1**. When the processor **140** inputs a target string **TC1** into the application program, the processor **140** may overlap and display a floating window **FW1** of the application program on the game screen **F1** through the display device **110**. A window range of the floating window **FW1** is smaller than the game screen **F1**. Based on the above, the user can view the game screen **F1** and the floating window **FW1** at the same time without stopping the game or switching the game screen **F1** to another screen and thus can simultaneously obtain a function or information provided by the application through the floating window **FW1** during the game.

[0030] FIG. **4** is a flow chart of a game assistance method according to an embodiment of the disclosure. With reference to FIG. **1** and FIG. **4**, the method provided by this embodiment is applicable to the electronic apparatus **100** provided by the foregoing embodiments, and steps of the game assistance method provided by this embodiment are described in detail as follows together with the various devices in the electronic apparatus **100**.

[0031] In step **S410**, the processor **140** executes a game application and controls the display device **110** to display a game screen of the game application. In step **S420**, the processor **140** recognizes text in the game screen. In this embodiment, step **S420** may be implemented as steps **S421** to **S423**.

[0032] In step **S421**, the processor **140** provides a text mark box on the game screen. The text mark box is superimposed and displayed on the game screen. The text mark box is used to mark a text region in the game screen that the user is interested in. In step **S422**, the processor **140** captures a partial game screen from the game screen according to the text mark box. In other words, the abovementioned partial game screen is formed by pixels located in the text mark box in the game screen.

[0033] In some embodiments, the processor **140** may adjust a position or a coverage size of the text mark box according to a user adjustment command. To be specific, when the processor **140** receives a user adjustment command applied to the text mark box through the input device **120**, the processor **140** may adjust the position or the coverage size of the text mark box. For instance, when receiving a drag operation on a box boundary of the text mark box, the processor **140** may enlarge or reduce the text mark box. Alternatively, when receiving a drag operation within the text mark box, the processor **140** may move the text mark box from a first position to a second position.

[0034] In step **S423**, the processor **140** performs text recognition on the partial game screen to obtain the text in the game screen. Compared to performing text recognition on the entire game screen, performing text recognition on part of the game screen can not only improve processing speed, but also accurately obtain text content that meets user needs.

[0035] For instance, with reference to FIG. **5A**, the display device **110** may display a game screen **F2**. The processor **140** may control the display device **110** to overlap and display a text mark box **51** on the game screen **F2**. The text mark box **51** may mark the text region in the game screen **F2** that the user is interested in. The processor **140** may capture the partial game screen selected by the text mark box **51** from the game screen **F2** to further recognize the text appearing in the partial game screen.

[0036] In step **S430**, the processor **140** generates a target string according to the recognized text. In this embodiment, step **S430** may be implemented as steps **S431** to **S424**.

[0037] In step **S431**, the processor **140** generates a plurality of first words according to the recognized text. To be specific, the processor **140** may generate one or a plurality of words or a phrase composed of a plurality of words according to the recognized text. The processor **140** may obtain these words and phrases from the recognized text according to a natural language processing technique (e.g., a semantic analysis model). For instance, assuming that the recognized text is “adventure with character A”, the first word obtained by the processor **140** is, for example, “character A”, “together”, “adventure”, or “adventure together”, etc.

[0038] In step **S432**, the processor **140** generates a plurality of second words according to game

information. In some embodiments, the game information may include the game name. Alternatively, in some embodiment, the game information may include virtual characters, patterns, image objects, or game scene features in the game screen, etc. Through image recognition technology such as image object recognition or color recognition, the processor **140** may recognize virtual characters, patterns, image objects, game scene features, etc. in the game screen. In some embodiments, the processor **140** may use a convolutional neural network model or other machine learning models to recognize the screen content of the game screen to obtain the game information. After obtaining the above game information, the processor **140** may generate the plurality of second words according to the game information. For instance, the second words may be game names, virtual character names, game scene features, etc.

[0039] In step **S433**, the processor **140** provides a candidate word list through the display device **110**. The candidate word list includes the plurality of first words and the plurality of second words. For instance, with reference to FIG. 5A, the display device **110** may display the game screen **F2** and a user graphical interface **52** superimposed on the game screen **F2**. After recognizing the text in the text mark box **51** and obtaining the game information, the processor **140** may overlap and display a candidate word list **L1** including the plurality of first words and the plurality of second words on the game screen **F2**.

[0040] In step **S434**, the processor **140** selects at least one selected word from the candidate word list according to a user selection command to determine the target string. To be specific, the processor **140** may select the at least one selected word from the plurality of first words and the plurality of second words in the candidate word list according to the user selection command. For instance, when the processor **140** receives a click command applied to a specific first word in the candidate word list through the input device **120**, the processor **140** may set the first word as the selected word. One or more selected words selected by the user may be combined into the target string.

[0041] In some embodiments, the processor **140** may select a selection order of each selected word according to the user selection command and determine a concatenation order of each selected word in the target string. In other words, the concatenation order of each selected word in the target string is determined based on the order in which each one selected word is selected. For instance, when the selection order of the first selected words is earlier than the selection order of the second selected words, the second selected words are to be concatenated after the first selected words to form the target string. It can be seen that the user can not only decide the selected words by himself/herself, but can also decide the concatenation order of the selected words simultaneously.

[0042] In some embodiments, the processor **140** may display the target string in a preview interface. This preview interface is superimposed on the game screen. In this way, the user may edit the target string by viewing the preview interface to ensure that the target string meets the user's needs.

[0043] For instance, with reference to FIG. 5B, the display device **110** may display the game screen **F2**. When the processor **140** sequentially selects a selected word **W1**, a selected word **W2**, and a selected word **W3** according to the user selection command, the selected words **W1**, **W2**, and **W3** also appear sequentially in a preview interface **Pz1** to form a target string **TC2**. More specifically, since the selection order of the selected word **W1** is earlier than the selection order of the selected word **W2**, the selected word **W2** is concatenated after the selected word **W1**. The preview interface **Pz1** may be set next to the candidate word list **L1**, so that the user can view the preview interface **Pz1** to edit the target string **TC2**.

[0044] In step **S440**, the processor **140** inputs the target string into an application and overlaps and displays a floating window of the application on the game screen through the display device **110**. In this embodiment, step **S440** may be implemented as steps **S441** to **S442**.

[0045] In step **S441**, the processor **140** inputs the target string into a search engine of the browser to obtain a walkthrough search result for the target string. The search engine is, for example,

Google search engine or Bing search engine, etc., and the disclosure is not limited thereto. In other words, the processor **140** may provide the target string as a key phrase to the search engine through the browser to drive the search engine to return the walkthrough search result for the target string. [0046] In step **S442**, the processor **140** overlaps and displays the floating window including the walkthrough search result on the game screen through the display device **110**. The walkthrough search result may include a webpage list, and this webpage list contains hyperlinks to a plurality of web pages obtained by performing a web search based on the target string. Therefore, after the user clicks on the hyperlink in the floating window of the browser, the floating window of the browser displays web content including a game walkthrough.

[0047] With reference to FIG. 5B, after the user determines the target string **TC2**, the user may click an option **B1** in the user graphical interface. Therefore, with reference to FIG. 5C, the processor **140** may input the target string **TC2** to the browser to drive the browser to send the target string **TC2** to the search engine. Next, the display device **110** may overlap and display a floating window **FW2** of the browser on the game screen **F2**. The floating window **FW2** of the browser may include a keyword phrase input field **SE1** and a walkthrough search result **SR1** of the search engine. The keyword phrase input field **SE1** has the target string **TC2**, and the walkthrough search result **SR1** includes at least one webpage link and webpage introduction content. In this way, the user can see the walkthrough search result **SR1** without stopping the game or switching the game screen to another screen.

[0048] In some embodiments, the processor **140** may copy the target string to a clipboard. The clipboard may be used as a temporary storage region for storing data or a file copied by the user of the electronic apparatus **100**. The clipboard is, for example, a system clipboard under the operating system (OS) of the electronic apparatus **100** or an additionally designed special clipboard, and the disclosure is not limited thereto. The target string copied to the clipboard may be used by the user in other applications. With reference to FIG. 5D, after copying the target string to a clipboard, the processor **140** may control the display device **110** to superimpose a notification **N1** on the game screen **F2** to notify the user that the target string has been copied to the clipboard.

[0049] In view of the foregoing, in the embodiments of the disclosure, when running the game application, the text in the game screen may be recognized. The target string generated based on the recognized text may be inputted into the application, and the floating window of the application receiving the target string may be overlapped and displayed on the game screen. Therefore, without interrupting the gaming experience, the electronic apparatus may use the text appearing on the game screen to implement specific functions, thus allowing a user to obtain a favorable gaming experience. Besides, the target text used for searching for a game walkthrough may be edited by the user in a convenient way, so as to more accurately obtain the walkthrough search result that meet the user's needs.

[0050] It will be apparent to those skilled in the art that various modifications and variations can be made to the disclosed embodiments without departing from the scope or spirit of the disclosure. In view of the foregoing, it is intended that the disclosure covers modifications and variations provided that they fall within the scope of the following claims and their equivalents.

Claims

1. A game assistance method, adapted to an electronic apparatus comprising a display device, the method comprising: executing a game application and displaying a game screen of the game application; recognizing text in the game screen; generating a target string based on the recognized text; and inputting the target string into an application and overlapping and displaying a floating window of the application on the game screen through the display device.
2. The game assistance method according to claim 1, wherein the step of recognizing the text in the game screen comprises: providing a text mark box on the game screen; capturing a partial game

screen from the game screen according to the text mark box; and performing text recognition on the partial game screen to obtain the text in the game screen.

3. The game assistance method according to claim 2, after the step of providing the text mark box on the game screen, the method further comprising: adjusting a position or a coverage size of the text mark box according to a user adjustment command.

4. The game assistance method according to claim 1, wherein the step of generating the target string based on the recognized text comprises: generating a plurality of first words according to the recognized text; providing a candidate word list through the display device, wherein the candidate word list comprises the plurality of first words; and selecting at least one selected word from the candidate word list according to a user selection command to determine the target string.

5. The game assistance method according to claim 4, wherein the step of generating the target string based on the recognized text further comprises: generating a plurality of second words according to game information, wherein the candidate word list further comprises the plurality of second words.

6. The game assistance method according to claim 4, wherein the at least one selected word is combined into the target string, and the step of selecting the at least one selected word from the candidate word list according to the user selection command to determine the target string comprises: selecting a selection order of each of the at least one selected word according to the user selection command and determining a concatenation order of each of the at least one selected word in the target string.

7. The game assistance method according to claim 6, wherein the step of selecting the at least one selected word from the candidate word list according to the user selection command to determine the target string further comprises: displaying the target string in a preview interface, wherein the preview interface is superimposed and displayed on the game screen.

8. The game assistance method according to claim 1, wherein the application comprises a browser, and the step of inputting the target string into the application and overlapping and displaying the floating window of the application on the game screen through the display device further comprises: inputting the target string into a search engine of the browser to obtain a walkthrough search result of the target string; and overlapping and displaying the floating window comprising the walkthrough search result on the game screen through the display device.

9. The game assistance method according to claim 1, further comprising: copying the target string to a clipboard.

10. An electronic apparatus, comprising: a display device; a storage device recording a plurality of modules; and a processor coupled to the display device and the storage device, executing the modules, and configured to: execute a game application and displaying a game screen of the game application, recognize text in the game screen, generate a target string based on the recognized text, and paste the target string on an application and overlap and display a floating window comprising the application on the game screen through the display device.
