INTERACTIVE OVERLAY FOR VIDEO APPLICATIONS

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ABSTRACT

Systems and methods are provided for an interactive overlay system. A player component is configured to display video content on a display screen of a display device. An overlay component is configured to display an interactive overlay sequence on the display screen simultaneously with and independent of the video content. An input device is configured to provide an input from a user. A status of the interactive overlay sequence is responsive to the input from the user such that a presentation of the interactive overlay is changed in response to the input from the user.
1. START

310. DISPLAY VIDEO CONTENT ON DISPLAY SCREEN

320. INTERACTIVE OVERLAY RULES AND SEQUENCE INITIATED

330. DISPLAY PARTIALLY TRANSPARENT INTERACTIVE OVERLAY ON DISPLAY SCREEN

340. A USER PROVIDES ONE OF MULTIPLE RESPONSES

350. ACCEPT RESPONSE?

Y. FAVORABLE FEEDBACK PROVIDED

N. UNFAVORABLE FEEDBACK PROVIDED

FIG. 3
START

DISPLAY VIDEO CONTENT ON DISPLAY SCREEN

INTERACTIVE OVERLAY SEQUENCE INITIATED BY ADMINISTRATOR

DISPLAY PARTIALLY TRANSPARENT INTERACTIVE OVERLAY STATUS FOR A PREDETERMINED TIME

DISPLAY ANOTHER OVERLAY STATUS

A USER PROVIDES ONE OF MULTIPLE RESPONSES

FAVORABLE FEEDBACK PROVIDED

ACCEPT RESPONSE?

MORE QUESTIONS?

UNFAVORABLE FEEDBACK PROVIDED

END

FIG. 4
INTERACTIVE OVERLAY FOR VIDEO APPLICATIONS

RELATED APPLICATION


TECHNICAL FIELD

[0002] The present invention relates generally to interactive overlay systems, and specifically to an interactive overlay that obscures a portion of a screen of video content while operating simultaneously and independently of the video content.

BACKGROUND

[0003] Video content, including gaming, audio-visual programming, and computer centric media, is widely available and increasingly occupies the attention and time of many. As the range of activities accomplished with a computer increases, new and innovative ways to provide an interface with a computer are often developed to complement the changes in computer functionality and packaging.

SUMMARY

[0004] A system and method is provided for an interactive overlay system. The system comprises an overlay component configured to display an interactive overlay on the display screen simultaneously with and independent of the program content. The interactive overlay also comprises at least one overlay status. The system further comprises an input device capable of providing multiple inputs from a user. The overlay component is configured to change the status of the interactive overlay on the display screen in response to user input in accordance with rules defined by the administrator. The interactive overlay may be partially transparent, opaque, or any variation thereof.

[0005] Another embodiment of the present invention includes a method for providing an interactive overlay sequence. Included are the actions of displaying video content on a display screen. On the display, an overlay sequence in accordance with a set of interactive overlay rules is initiated. The interactive overlay can begin with a notification status being displayed for a predetermined amount of time. The notification status provides information or instruction for the upcoming overlay sequence. The notification status is followed by a text status requesting a response from the user. The text status can provide a question and associated answers, or can provide alternative content, as described in greater detail below. Following a text status, the user will submit, and the system will receive and process, a response from a user which prompts the system to provide feedback based on the response. The feedback given is dependent on the character of the user’s response, which is governed by the rules. For example, a first response may be accepted according to the rules and result in a first, favorable change in the text status, whereas a second, unaccepted response will result in a second, unfavorable change in the text status.

[0006] Following either or both the notification and text statuses, a minimized window may remain on the display. The minimized window can provide limited information to the user, such as time remaining until the next question, the number of remaining questions, or that a message has been sent to the user. The administrator can modify the rules to tailor the visual presentation of the minimized window and content displayed therein.

[0007] Yet another embodiment of the present invention includes a method of displaying program content simultaneously with and independently of an interactive overlay on a display screen. The interactive overlay as considered by the present invention considers multiple possible modes. For example, an overlay may be presented simply to provide information. This could include notice that a sequence of overlays has been initiated, a timer, a score, a reference, and/or administrator identification information. The interactive overlay can also provide interactive content, specifically a series of questions and answers, where the user has multiple answers from which to select. Additionally, the interactive overlay may contain hyperlinks to related content or be capable of communicating with one or more system administrators with the aid of a user input device.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. 1 illustrates an example of an interactive overlay system in accordance with an aspect of the invention.

[0009] FIG. 2 illustrates an example of an overlay component in accordance with an aspect of the invention.

[0010] FIG. 3 illustrates an example of a method for providing an interactive overlay in accordance with an aspect of the invention.

[0011] FIG. 4 illustrates another example of a method for providing an interactive overlay in accordance with an aspect of the invention.

[0012] FIG. 5 is a schematic block diagram illustrating an exemplary system of hardware components capable of implementing examples of the present disclosed in FIGS. 1–4, such as the interactive overlay system illustrated in FIG. 1.

DETAILED DESCRIPTION

[0013] The present invention provides an overlay component configured to display an interactive overlay on the display screen simultaneously with and independent of a video source associated with the display. In accordance with an aspect of the present invention, the overlay is played over an existing audiovisual content source, which can be local to a user or remote (e.g., provided over a network connection). For example, the content source can include a media player, a game console, an Internet site, or broadcast/multicast video through an appropriate hardware connection. The overlay is interactive, such that input provided by the user with an associated input device can affect the appearance and behavior of the overlay, with a discrete instance of a given appearance and behavior being referred to herein as a “status” of the overlay. For example, one status might include a “text status”, that is, a block of text (e.g., a question) that remains on the screen until a response is provided by the user. Another status might include a “notification status” that counts down a defined interval between text statuses. It will be appreciated that the interactive overlay can include a large
number of individual statuses, with transitions among the statuses governed by a set of rules stored with the overlay content.

[0014] The overlay is presented independently of underlying content, such that there is no interaction between the overlay and other programs that may be running simultaneously. However, the overlay is interactive to the user, even as the user has a limited number of available responses when presented with an overlay. The interactive overlay may also be used to encourage a response from the user. A particular overlay status of the overlay sequence can be displayed over the program content such that a central portion (e.g., a portion encompassing a centroid of the screen) of the underlying content is obscured. This is typically a result of the user failing to respond to a question or repeated submission of unacceptable answers. Additionally the overlay may include dynamic overlays that move, flash, or present a scene that substantially obscures the underlying video content. A behavior of the overlay, specifically a response of the overlay to various user inputs during the sequence can be defined by a rule set by an administrator prior to initiation of an interactive overlay sequence. Thus, the overlay sequence is structured and inititated by the administrator without regard for or in response to the user’s conduct, provided the user is logged into an authorized device running the interactive overlay system.

[0015] In one embodiment of the present invention, one administrator is a teacher and the user a student. The teacher, with administrator privileges, defines rules for an interactive overlay sequence. The rules govern operation of the overlay sequence complete with content, acceptable and unacceptable responses, timing constraints, and appropriate reactions to various user input. Upon initiation of the sequence, the teacher’s role is that of monitor, as the sequence runs through the overlay component in accordance with the set of rules. For instance, the sequence can begin with a translucent interactive overlay status providing notice that a series of questions is upcoming. The initial overlay status is configured to expire after a predetermined amount of time, followed by an overlay status containing a question and multiple choices for a response. Depending on whether the user input is acceptable or unacceptable, the overlay status will change according to the rules as established by the teacher. For example, the overlay status might transition to a status indicating receipt of positive feedback to the user, if an acceptable answer is received, or transition to a second status, representing negative feedback to the user, if an unacceptable answer is received.

[0016] The user employs an input device to provide a response to the question presented as part of the overlay. For example, a multiple choice question may be presented, wherein the user may choose from answers designated as “A, B, C,” etc., or “1, 2, 3,” etc. The input device could be, for example, a remote control, game console controller, computer keyboard, mouse, smart phone, tablet computer, camera with gesture recognition software, microphone, or other suitable device. During the interactive portion of the overlay sequence, the user has some ability to adjust the sequence progression. For example, when a student user is presented with an overlay containing a question, an acceptable response may remove the overlay or change an overlay status to be less obtrusive, until a predetermined period of time has elapsed. An unacceptable response may cause the overlay to be maintained in present form, changed to a more obtrusive status, or removed or made less obtrusive for a period of time less than the period of time following an acceptable response.

[0017] In one implementation, the overlay can be used to deliver questions to the user, which can be answered via the input device, with the response given by the user affecting some aspect of the overlay appearance and behavior, such as size, opacity, or frequency with which the overlay is displayed. Repeated unacceptable responses or failure to respond can result in changes to the overlay that obscure or distract from the underlying audiovisual content. These changes can be configured by an administrator to facilitate cooperation from the user in answering the questions provided. It is envisioned that a system in accordance with an aspect of the present invention could be employed as an educational tool to encourage a user, such as a student, to complete homework or supplementary educational material, either before or during recreational activities such as watching television, using a computer, tablet device, or smart phone, or playing console video games.

[0018] In another embodiment of the present invention, the user may be viewing video content that constitutes a lesson, webinar, or other task required by the administrator. In the example of a web based lecture viewed on a computing platform, the user may have access to additional content or applications. For example, the computer may have a web browser, game software, an instant messaging application, video viewing software, or similar applications that would distract the user from the base, required task. In accordance with other aspects of the invention, the administrator may set rules that restrict what other programs or applications are available while the user is engaged with the required task. The restriction may forbid access entirely or limit the amount of time such program or application may be accessed. Accordingly, an overlay status may be triggered if the user violates the rules set by the administrator. The overlay status may partially obscure the additional content, the display screen, or otherwise grab the attention of the user. The overlay status may require the user to acknowledge the overlay status in order to have it removed, or simply discontinue use of the additional content that constituted the violation.

[0019] As employed herein, an administrator is an individual with privileges that allow him or her to define rules governing an interactive overlay sequence or initiate the sequence. The present invention contemplates a variety of applications where the administrator’s role would be defined in accordance with the relationship with the user as well as the desired goal for the particular sequence. An administrator may be a parent, counselor, instructor, an administrator at an educational institution, or other individual or organization providing overlay content intended for the benefit of the user. For example, an administrator may be a teacher and the user a student. In this case, the administrator may present academic questions related to educational goals. An administrator may also be a counselor, presenting questions or asking for feedback to aid in the user’s development. Moreover, as the present invention is not limited to educational content, the user can also be an administrator. The administrator may present a sequence in a trivia contest related to underlying content on the display, for example, where the administrator can be one of the participants.

[0020] As such, the user can be given administrative privileges to more personally customize the overlay system for their individual use. Accordingly, a user can have control over when an overlay is presented, the amount of time it remains
on the screen, the content provided, as well as control over the visual aspects of the overlay itself. If the user is watching a television program, for example, the user can choose to initiate an overlay during a commercial break in the program of interest. The overlay may be chosen to cover all or a portion of the screen and the user can discontinue the overlay when the program resumes. The overlay can contain any conceivable digital content, such as the lessons described herein, or can provide links to other types of information, such as an RSS feed, webpage, picture folder, or minor another connected device.

[0021] In another aspect of the present invention, the relationship between administrator and user is important with respect to the type and content of the sequence. A typical user may be a student or child, wherein the administrator seeks to introduce or reinforce a lesson. Thus, a parent may also serve as an administrator, and tailor questions and responses for a variety of goals. The invention described can also be used for entertainment purposes, for example, with the interactive overlay providing content associated with the base video content.

[0022] The administrator has authority to define a set of rules to govern one or more interactive overlay sequences. Each interactive overlay sequence can be configured to respond to multiple user inputs. According to the rules set by the administrator, an acceptable user input leads to a particular set of actions, wherein an unacceptable user input leads to a different set of actions. The administrator can configure an interactive overlay sequence to meet a desired goal with respect to the user. For example, if the administrator is a teacher who wishes to reinforce, say, a history lesson, the administrator will load a series of history questions to be presented in the interactive overlay statuses. In such a case, the administrator can define rules such that an accepted response reduces a number of required questions or extends a time interval between questions, and an unaccepted response requires additional questions or decreases the time interval between questions.

[0023] The interactive overlay can be translucent or opaque, and may include both audio and video components. In one implementation, the interactive overlay is displayed as translucent to ensure that the video content on the display screen is still partially visible, thereby attracting the attention of the user while allowing the user to maintain limited visibility of the video content. In accordance with one aspect of the invention, an overlay is intended to obscure an insubstantial portion of the display screen unless or until the user provides an unaccepted response or fails to respond within a predetermined time period. For example, if an unaccepted response is given, the translucent overlay may become opaque or enlarged, in order to highlight an accepted response. As a further example, if the user fails to provide any response within a predetermined time period, additional overlay statuses may be presented. These additional overlay statuses may cover a substantial portion of the screen and/or may encompass the centroid of the viewing area of the video content. Further examples are contemplated, in which more than one overlay may be used to obscure the viewing area, the overlay may move about in the viewing area of the display screen, the overlay may flash brightly, or the overlay is otherwise dynamic to maintain the attention of the user. The overlay can also employ other attention grabbing tools, such as animated characters, audio signals, or customized alerts.

[0024] Rules can be applied to the overlays such that the display is partially or fully obscured. Further, in a sequence of overlays, the shape, size and character of the overlay can change. For example, the first overlay can first be presented as substantially transparent, obscuring a minor portion of the display, and stationary. However, if the user ignores the overlay or fails to provide acceptable responses, the overlay can become increasing opaque, obscuring a larger portion of the screen, and move randomly across the display. The same modifications to the overlay can be made for future or additional overlays, as the administrator sees fit.

[0025] The administrator provides content for and rules to define the user experience, for example, on a server hosting software for providing the overlay content. For instance, an overlay sequence may be structured as a history lesson presented with a video game playing concurrently. The sequence may start with an initial notification status presented in a portion of the display screen that does not significantly obscure or distract from the underlying content to alert the user that a sequence of questions has been initiated. This notification status may transition to a text status automatically at the end of a predetermined time or may require acknowledgment from the user. The text status can present a question and multiple answers from which the user must choose. The overlay status would change according to the rules as defined by the administrator, as described above. Regardless of the response being accepted or unaccepted, the status will update according to the set of rules defined by the administrator for the overlay sequence. In one embodiment, the administrator may initiate a sequence in advance. When the user attempts to access video content or games, the user is then prompted to log in to the interactive overlay system to gain access to both. By this action, access to the video content or game is allowed, and the sequence is presented concurrently to the user, who responds accordingly.

[0026] The interactive overlay further comprises a variety of overlay statuses. An individual status, as used herein, represents a configuration of the appearance and behavior of the overlay having different properties from the other statuses in the sequence. Each overlay status can be configured to respond to multiple user inputs. Typically, but not necessarily, the sequence will begin with a notification status. This may provide information to the user such as the number of questions in the sequence, the amount of time between questions, and the topic of the upcoming sequence. Again, typically but not necessarily, this notification status will be replaced with a text status after a predetermined time as a second status is presented. However, the notification could require the user to select from a catalogue of choices before the remainder of the sequence is presented.

[0027] When the interactive overlay statuses present questions, the user is then encouraged to respond by inputting one of multiple available responses. The overlay may present a question as a text status displayed on a screen, through audio (e.g., a recording by an administrator or other content provider or machine rendered speech), or other available method. The method could employ, for example, a vibrating hand held controller. The user may then respond by use of any of multiple devices including, but not limited to, an input/output device, a microphone configured to receive an audio response, and a camera configured for gesture recognition. The user inputs are then subject to the rules as defined by the administrator when the sequence was initiated. However, the
administrator has the capability to modify the rules during an active overlay sequence if desired.

[0028] In one embodiment of the invention, an acceptable response will lead to a change in the frequency of the sequence that favors the user. For example, if the user is playing a computer game, and the administrator initiates a sequence of educational questions in the interactive overlay, the user may desire the sequence to repeat less frequently. Alternatively, if the user is competing in a trivia contest related to the underlying video content, a favorable response may increase the frequency of questions in order to increase the user’s score.

[0029] In the event that an unfavorable response is received, the rule set defined by the administrator is invoked to determine how the overlay will be changed. As described above, depending on the application, limiting or increasing the frequency of questions may challenge the user experience. An unaccepted response could prompt an accepted answer to be highlighted. Typically, this result would follow a predetermined number of unaccepted answers. This could also prompt an explanation for the accepted answer or a hyperlink to additional information regarding the question. The rules may also invoke an overlay that obscures a significant portion of the video. Also, a central portion of the screen may be obscured by an opaque or partially transparent overlay in response to an unaccepted response. In the event that no response is received, an overlay component may invoke an overlay that obscures a significant portion of the screen or otherwise interferes with enjoyment of the underlying content to encourage a response. For example, the overlay could increase in size or opacity, begin moving or flashing, or begin providing audio unassociated with the underlying content.

[0030] An administrator has privileged access to the program engine that includes several features that aid the administrator in configuring an overlay sequence that guides the user experience. The administrator gains access to the program engine, for example, by logging onto a server hosting the software that provides the overlay content. The administrator may then create an account for a user, or select an existing account that the administrator is privileged to access. Features available to the administrator include, but are not limited to, the subject matter of the overlay prompts, how the status is displayed, on which devices the overlay will appear, how progress is gauged, what constitutes an accepted or unaccepted response, what consequence results from an accepted or unaccepted response, what consequence results from a lack of response, the timing and frequency of overlay prompts, and similar configuration parameters for the overlay sequence provided to the user.

[0031] For example, if the administrator is a teacher and the user a student, the administrator may set an academic goal for the user. The goal may be providing a favorable response on 90% of a set of questions within a predetermined timeframe. For instance, a single history lesson may be due in one evening, with ten questions presented to the user. The administrator may select the topic, specify questions to present to the user, and define the timeframe in which the user must complete the lesson. When the user begins a video game or other audiovisual entertainment a sequence of overlay statuses representing the defined questions is initiated. The ten questions may appear at six minute increments, for a goal of completing in an hour’s time. Once begun, if a response is unaccepted, the time between questions may decrease, to allow for a greater number of questions. If the response is accepted, the time between questions may increase. This may result in only nine questions presented during the hour, while still achieving the initial goal.

[0032] There may be multiple features available to the user to reach this goal. For instance, the administrator may offer the user the option to log on to a computer program that provides a dedicated lesson where the student may answer questions uninterrupted in advance of turning to video content. This action could decrease the number or frequency of question prompts, or could satisfy the lesson requirement altogether. Alternatively, if the user fails to cooperate with the lesson provided, the user can be locked out from utilizing authorized devices or be blocked from accessing audio-visual or other content altogether in accordance with the set of rules governing that user log in. At this point, the administrator would be required to reset the sequence in order to allow the user to access content in the future.

[0033] The system assigns each user a unique log in. This log in can be used to tailor many of the features available from the system. For example, the log in identifies the user, such as a student, where an administrator, such as teacher or parent, can create rules for governing the particular user’s device use. The administrator can further tailor lessons and provide content or messages for the particular user.

[0034] Each authorized device operating on the system can be configured to recognize an individual log in. Thus, the log in is intended to follow the user on each device. For example, a user may have an authorized portable device (e.g., tablet, gaming-teevee, smartphone), a stationary computing platform (e.g., desktop computer, gaming system, or television), as well as an authorized shared device (e.g., a classroom computer). Accordingly, as the user accesses each device, the system recognizes the user as being active on the device, and can provide overlays and lessons as set by an administrator. This is particularly useful if the user is disrupted in the middle of a lesson (say, the end of class). However, the system can also adapt to the situation where a user switches from one device to another, for example, at the end of a television program or a battery goes flat in a device. Additionally, this feature prohibits the user from attempting to avoid completing a lesson by switching from a first device where an overlay screen is obscuring the display to a second device were the lesson had not been initiated. Thus, the system can recognize that a user has switched devices, and the lesson in progress will reinitiate in the second device.

[0035] The system is further configured to recognize multiple authorized users active on a single authorized device. For example, two or more users can be engaged in a multiplayer game running on a single gaming device. The device can be configured to dedicate a separate portion of the screen for each user. Thus, as the system operates according to the rules as applied to the individual user, that user’s screen can be subject to the same lessons and associated overlays as if that user was using the device individually. As noted previously, this feature advantageously follows a user when the user switches or attempts to access another device, even as the other device may belong to another authorized user.

[0036] In a classroom setting, for example, a lesson can be provided allowing for immediate feedback from connected, authorized users. Thus, a question can be provided with a multiple answers, and the users can input answers to be displayed on common screen. This allows for the teacher to receive instant feedback, to better identify challenging subject matter and guide the class through the lesson.
Additionally, the multiple authorized users may be presented with the same overlay obscuring a shared portion of the display. For example, the overlay can present a lesson to the users as a competition where the provided questions can earn points to a user for answering questions quickly and correctly. In this implementation, the multiple users can be collocated and viewing the same device or different devices, or may be located in different locations utilizing different devices when the lesson is presented.

The system is configured to provide feedback in a variety of ways both to the administrator and the user. Feedback is structured to change the overlay sequence in a way that enhances the user experience. To continue with our example, an unobtrusive overlay may be present on the display screen between question prompts that shows number of questions presented or remaining, number of responses accepted or unaccepted, the time until the next question, and progress in reaching the assigned goal. The administrator may set rules that govern what is displayed, in what format, and for what duration. The administrator has a separate set of tools to gauge user performance. The administrator has access to view the user responses, including not only accepted and unaccepted responses, but the time taken to answer as well as the number of overlays displayed before a response was given. Further, the administrator has the authority to modify the sequence in response to the user’s performance as the sequence plays out. If a user is particularly slow to respond, the frequency and/or size of the overlay may be increased, for example. Additionally, the administrator and user may both have access to historical data and statistics, including number of sequences initiated, the user’s performance, the types of lessons completed, the user’s performance relative to peers, and similar information. Access to some information and configuration options may be limited according to a level of privilege provided to a given administrator.

FIG. 1 illustrates an example of an interactive overlay system 100 in accordance with an aspect of the invention. The interactive overlay system 100 includes an overlay component 200, a video component 110, a user input/output component 130, a display 140 and a server 150. The overlay component 200 can be configured to display an interactive overlay on a display screen simultaneously with and independent of video or other programming provided by the video component 110. It will be appreciated that the term “video” as used herein, is intended to encompass both the visible and audible content (if any) provided from the video component. The overlay component 200, pertaining to an embodiment of the present invention, is described with greater detail with respect to FIG. 2. As described herein, the overlay component 200 is configured to allow video content from the video component 110 to be displayed as a base content, while presenting interactive overlays thereon. The video component 110 may include a video game console, television component, DVD player, Internet browser, or other device or software configured to provide video content.

The user input/output component 130 may include, for example, a remote control, a game console controller, a computer keyboard, a mouse, a smartphone, a microphone, a sensor configured to detect visible, infrared, and ultraviolet light radiating or reflected from the user, a speaker, a tablet computer, or other suitable device. Accordingly, a response can be provided by the user via pressing a button representing one of a plurality of available responses, typing a response, touching or clicking on an object on one of the display 140 or a screen of the user input/output component 130, verbalizing the desired response, or making a gesture representing the desired response. To this end, the user input/output component 130 can include appropriate pattern recognition software for recognizing responses in detected speech or gestures.

Although the user input/output component 130 is intended primarily for the user to provide answers to the interactive overlay status questions, the present invention contemplates that the user input/output component 130 can be configured to receive information from the overlay component 200 as well. For example, feedback can be provided in response to a question, such as a green light for an accepted answer, or a red light or vibration for an unaccepted answer. Further, if the user input/output component 130 is capable of displaying information, such as a smartphone or tablet computer, additional features are possible. For example, explanations for accepted and unaccepted responses and/or hyperlinks to related information may be displayed, as well as scores displayed and messages shared with the administrator.

FIG. 2 illustrates an example of an overlay component 200 in accordance with an aspect of the invention. The overlay component 200 comprises a software or firmware overlay application 230 that combines content from a player component 250 and an overlay generator 220. The overlay application 230 can be implemented as machine readable instructions stored on a non-transitory computer readable medium 260 and executable by an associated processor 240. The combined content is presented to a display 242. The display 242 can be a visual display of a computer output, television, or viewing device associated with a content providing device. The display 242 comprises a display screen on which content is displayed, including the interactive overlay as described herein. The overlay component 200 comprises a video interface 252 that collects content from a player component 250 that is operatively connected to a video source 256 and contains a storage component 254. The video source 256 can provide content from any of a variety of sources, including streaming content, computer readable media storing audio-visual content, and game consoles. The storage component 254 can be a non-transitory computer readable medium. The content is then outputted by the player component 250 through the video interface 252 to the overlay application 230. The overlay generator 220 is connected to a network interface 210, which further connects to a server 212 and one or more input devices 214. The server 212 may be used by the administrator to configure the rules and initiate a sequence that meets the desired goal for the user. The input device 214 is intended for collecting user input in response to overlay status questions. As described herein, the overlay application 230 combines video output from the player component 250 and the overlay generator 220 to be configured by the processor 240 for the display 242. The system described in FIGS. 1 and 2 can be a separate “stand alone” components can be implemented as software on a common non-transitory computer readable medium with the player component 250.

FIG. 3 illustrates an example of an interactive overlay sequence 300 in accordance with an aspect of the invention. The interactive overlay sequence 300 can be implemented in the interactive overlay system 100 of FIG. 1. As such, reference is to be made to the example of FIG. 1 in the following discussion of the example of FIG. 3.

In the example of FIG. 3, an interactive overlay sequence 300 is outlined. The sequence begins with video
content displayed on a screen, as shown in reference 310. In step 320, an interactive overlay sequence defined by a set of rules is initiated. Step 330 has an interactive overlay in a notification status displayed on the display screen for a predetermined amount of time, obscuring a portion of the video content. In step 340 an interactive overlay in a text status follows the notification status. The text status presents a question and multiple answers to the user, requesting a response. The user provides one of multiple responses in step 350. At decision point 350, if the user provides a first response, then a first change to the text status will occur 370. If the user provides a second response, a second change to the text status is provided in step 380.

Fig. 4 is an expansion of the method of Fig. 3. Following the display of video content 410, an administrator initiates the interactive overlay sequence and attendant rules in step 420. A partially transparent interactive overlay status is displayed for a predetermined time in step 430. Upon expiration of the predetermined time, another overlay status is provided with questions and multiple responses, as shown in step 432. The user's response, as shown in step 440, is considered at decision point 450, to determine if the response is accepted (Y) or unaccepted (N). As explained with respect to Fig. 3, a first response can correspond to an accepted response, and a second response can correspond to an unaccepted response. Thus, if the response is accepted, the overlay component reacts with a favorable time adjustment in step 460. If the response is not accepted, which can include a failure to respond, the overlay component provides unfavorable feedback at step 470.

Unfavorable feedback options will vary with the application and can be specified by an administrator when configuring the overlay sequence. Accordingly, for a given overlay sequence, any of a number of types of feedback can be selected for presentation after an unaccepted response. In one implementation, an unaccepted response results in an unfavorable time adjustment. As described herein, some users may desire less frequent questions. For example, while the user is playing a video game he or she may consider displaying overlay status of difficulty. Accordingly, an unaccepted response would result in unfavorable feedback that increases the frequency with which the overlay statuses are presented.

In another implementation, an unaccepted response could elicit an accepted response to be highlighted. The highlight could be opaque, or increase the area obscured by the interactive overlay. In one implementation, the overlay can include an explanation of the correct response or can prompt a hyperlink to appear, which the user could select to display a stored explanation of the correct response or send the user to a webpage with additional information. In yet another implementation, the system can react to an unaccepted response by substantially obscuring the video content in an area encompassing the centroid of the video screen for a set time period or until a desired response is achieved. Additionally, or alternatively, the overlay may flash, bounce around the screen, or otherwise behave in a manner intended to distract from the underlying content. Such a response might be used, for example, when the unaccepted response is a failure to respond. Both favorable and unfavorable user responses yield to decision point 480, where it is determined whether more questions are appropriate, thus repeating the sequence at start point 400, or ending the sequence at endpoint 490.

It is to be understood, however, that the interactive overlay sequence 300 is not limited to the examples of FIG. 3 and FIG. 4, but that any suitable sequence may be implemented in accordance with varying rules and content as chosen by the administrator. Further, the sequence illustrated in FIG. 3 and FIG. 4 follow only one series of method steps in a particular order, whereas the sequence may be modified by the administrator according to the particular goal to be achieved.

Fig. 5 is a schematic block diagram illustrating an exemplary system 600 of hardware components capable of implementing examples of the present invention disclosed in FIGS. 1-4, such as the interactive overlay system illustrated in FIG. 1. The system 600 can include various systems and subsystems. The system 600 can be, for example, a personal computer, a laptop computer, a workstation, a computer system, an appliance, an application-specific integrated circuit (ASIC), a server, a server blade center, a server farm, or a similar device.

The system 600 can include a system bus 602, a processing unit 604, a system memory 606, memory devices 608 and 610, a communication interface 612 (e.g., a network interface), a communication link 614, a display 616 (e.g., a video screen), and an input device 618 (e.g., a keyboard and/or a mouse). The system bus 602 can be in communication with the processing unit 604 and the system memory 606. The additional memory devices 608 and 610, such as a hard disk drive, server, stand alone database, or other non-volatile memory, can also be in communication with the system bus 602. The system bus 602 interconnects the processing unit 604, the memory devices 606-610, the communication interface 612, the display 616, and the input device 618. In some examples, the system bus 602 also interconnects an additional port (not shown), such as a universal serial bus (USB) port. The processing unit 604 can be a computing device and can include an application-specific integrated circuit (ASIC). The processing unit 604 executes a set of instructions to implement the operations of examples disclosed herein. The processing unit 604 can include a processing core.

The additional memory devices 606, 608 and 610 can store data, programs, instructions, database queries in text or compiled form, and any other information that can be needed to operate a computer. The memories 606, 608 and 610 can be implemented as non-transitory computer-readable media (integrated or removable) such as a memory card, disk drive, compact disk (CD), or server accessible over a network. In certain examples, the memories 606, 608 and 610 can store text, images, video, and/or audio, along with appropriate instructions to make the stored data available at an associated display 616 in a human comprehensible form. Additionally, the memory devices 608 and 610 can serve as databases or data storage for the interactive overlay system illustrated in FIG. 1. Additionally or alternatively, the system 600 can access an external data source through the communication interface 612, which can communicate with the system bus 602 and the communication link 614.

In operation, the system 600 can be used to implement a control system for an interactive overlay system that governs the interaction between the administrator and user. Computer executable logic for implementing the interactive overlay system resides on one or more of the system memory 606 and the memory devices 608, 610 in accordance with certain examples. The processing unit 604 executes one or more computer executable instructions originating from the
system memory 606 and the memory devices 608 and 610. The term “computer readable medium” as used herein refers to a medium that participates in providing instructions to the processing unit 604 for execution, and can include multiple physical memory components linked to the processor via appropriate data connections.

What have been described above are examples of the present invention. It is, of course, not possible to describe every conceivable combination of components or methodologies for purposes of describing the present invention, but one of ordinary skill in the art will recognize that many further combinations and permutations of the present invention are possible. Accordingly, the present invention is intended to embrace all such alterations, modifications and variations that fall within the spirit and scope of the appended claims.

What is claimed is:

1. An interactive overlay system comprising:
   a server to store a set of rules selected by an administrator to govern presentation and content of an interactive overlay sequence;
   an overlay component configured to display the interactive overlay sequence on a display screen simultaneously with video content provided from a player component independent of the server; and
   an input device configured to provide an input from a user, the overlay component being responsive to the input from the user such that the status of the interactive overlay is changed in response to the input from the user according to the stored set of rules.

2. A system as recited in claim 1, wherein the overlay component further comprises:
   a network interface configured to communicate with an administrator over the server or the user through the input device;
   an overlay generator to generate the interactive overlay sequence in accordance with the set of rules; and
   an overlay application to provide the interactive overlay sequence to the display.

3. A system as recited in claim 1, the set of rules defining a predetermined period after which, if no acceptable input from the user has been received, the overlay component changes the status of the interactive overlay to a status designed to substantially interfere with enjoyment of the underlying video content.

4. A system as recited in claim 3, wherein the set of rules defines, for a given status of the interactive overlay, a first response and a second response, and the overlay component being configured to change the associated status of the interactive overlay to a first status when the first response is received and to a second status when the second response is received.

5. A system as recited in claim 4, wherein the predetermined period is increased when the first response is received and decreased when the second response is received.

6. A system as recited in claim 1, wherein the status is a text status representing a question asked of the user, the question having at least one acceptable response and at least one unacceptable response.

7. A system as recited in claim 6, wherein the overlay component is configured to increase the defined interval when an acceptable response is received and decrease the defined interval when an unacceptable response is received.

8. A system as recited in claim 6, wherein when a number of unacceptable responses exceeds a predetermined threshold, the user is locked out from associated log ins and devices.

9. A system as recited in claim 1, wherein the user has a single log in that provides access to a plurality of authorized display devices, such that an associated status of the interactive overlay is substantially identical across the plurality of display devices.

10. A system as recited in claim 1, wherein the system is configured to recognize a plurality of users and allow access for the plurality of users to one or more display devices simultaneously.

11. A system as recited in claim 10, wherein an unacceptable response from one of the plurality of users prompts an overlay to selectively obscure a portion of the display associated with the individual user’s screen of interest.

12. A system as recited in claim 1, wherein the set of rules governing the overlay sequence can be edited by an administrator via a remote computer.

13. A method for providing an interactive overlay sequence, comprising:
   displaying video content on a display screen;
   initiating the interactive overlay sequence in accordance with a set of interactive overlay rules;
   displaying an interactive overlay in a notification status on the display screen for a predetermined amount of time;
   displaying an interactive overlay in a text status following the predetermined amount of time, the text status requesting a response from the user;
   receiving a response from a user; and
   providing feedback to the user based on the response, wherein a first response from the user will result in a first change in the text status and a second response will result in a second change in the text status, the first change and the second change in the text status being different.

14. The method of claim 13 wherein a source of the video content is independent of a server storing the set of interactive overlay rules.

15. The method of claim 13 wherein the first response is an accepted response resulting in the first change providing favorable feedback, and the second response is an unacceptable response resulting in the second change providing unfavorable feedback.

16. The method of claim 13 wherein initiating the interactive overlay sequence is performed through a server.

17. The method of claim 16 wherein unfavorable feedback is one of enlarging the interactive overlay, moving the interactive overlay around the display, making the interactive overlay opaque, and locating the interactive overlay in the centroid of the display.

18. The method of claim 13 wherein the first change is an increase in time between displaying subsequent statuses in the overlay sequence and the second change is a decrease in time between displaying subsequent statuses in the overlay sequence.

19. The method of claim 13 further comprising accepting an administrative log in allowing an administrator to modify the set of interactive overlay rules during the interactive overlay sequence.
20. A method for providing an interactive overlay sequence, comprising:
   displaying video content on a display screen;
   initiating the interactive overlay sequence in accordance
   with a set of interactive overlay rules;
   displaying a question for a user as part of the interactive
   overlay sequence after a period of time defined by the set
   of interactive overlay rules; and
   providing feedback to the user, such that a correct response
   from the user results in positive feedback and an increase
   in the period of time before a next question in the inter-
   active overlay sequence, a incorrect response from the
   user results in negative feedback and an decrease in the
   period of time before the next question, and a failure of
   the user to respond results in a change to the interactive
   overlay sequence to substantially obscure the video con-
   tent.

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