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REPRESENTING MULTIPLE STATES ON A SINGLE CONTROL IN A GRAPHICAL USER INTERFACE

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REPRESENTING MULTIPLE STATES ON A SINGLE CONTROL IN A GRAPHICAL USER INTERFACE

ABSTRACT

This publication describes systems and techniques for representing multiple (i.e., two or more) states on a single graphical user interface (GUI) control in the GUI of an application that executes at a computing device such as a smart phone, a tablet computer, and the like. That is, a single GUI control may be usable to adjust the values of two or more different settings, parameters, and the like by toggling the GUI control between two or more states.

For example, a camera application that executes at a computing device operably coupled to a camera may provide a camera viewfinder feature that provides a graphical view of a scene to be captured by the camera of the computing device. The GUI of the camera viewfinder feature can include a slider control in the GUI that can be toggled between two states: a scene brightness state and a face brightness state. When the slider control is toggled to the scene brightness state, a user may interact with the slider control to adjust (i.e., increase or decrease) the brightness of the entire scene to be captured by the camera of the computing device. When the slider control is toggled to the face brightness state, a user may interact with the slider control to adjust the brightness of the faces in the scene to be captured by the camera of the computing device. Using GUI controls that can represent multiple states to adjust the values of two or more different settings, parameters, and the like may enable software applications to decrease the amount of GUI controls included in a GUI by enabling a single GUI control to be used to adjust the values of two or more different settings, thereby enabling the software application to increase the user friendliness of its user interfaces, such as by reducing the amount of GUI controls included in a GUI to present GUIs with less clutter.

DESCRIPTION

This publication describes systems and techniques for representing multiple states on a single GUI control, so that a single GUI control can be used to adjust the values of two or more different settings, parameters, and the like by toggling the GUI control between two or more states. For example, a slider control can be used to adjust the values of two or more parameters by toggling the slider control between two or more states representing the two or more parameters.

In some examples, a camera application that executes at a computing device that includes or is operably coupled to a camera may provide a camera viewfinder feature that includes a single slider control that can toggle between a scene brightness state and a face brightness state. When the slider control is toggled to the scene brightness state, the slider control can be used to adjust the scene brightness of the image to be captured by a camera of the computing device. When the slider control is toggled to the face brightness state, the slider control can be used to adjust the face brightness of a face in the image to be captured by the camera of the computing device.

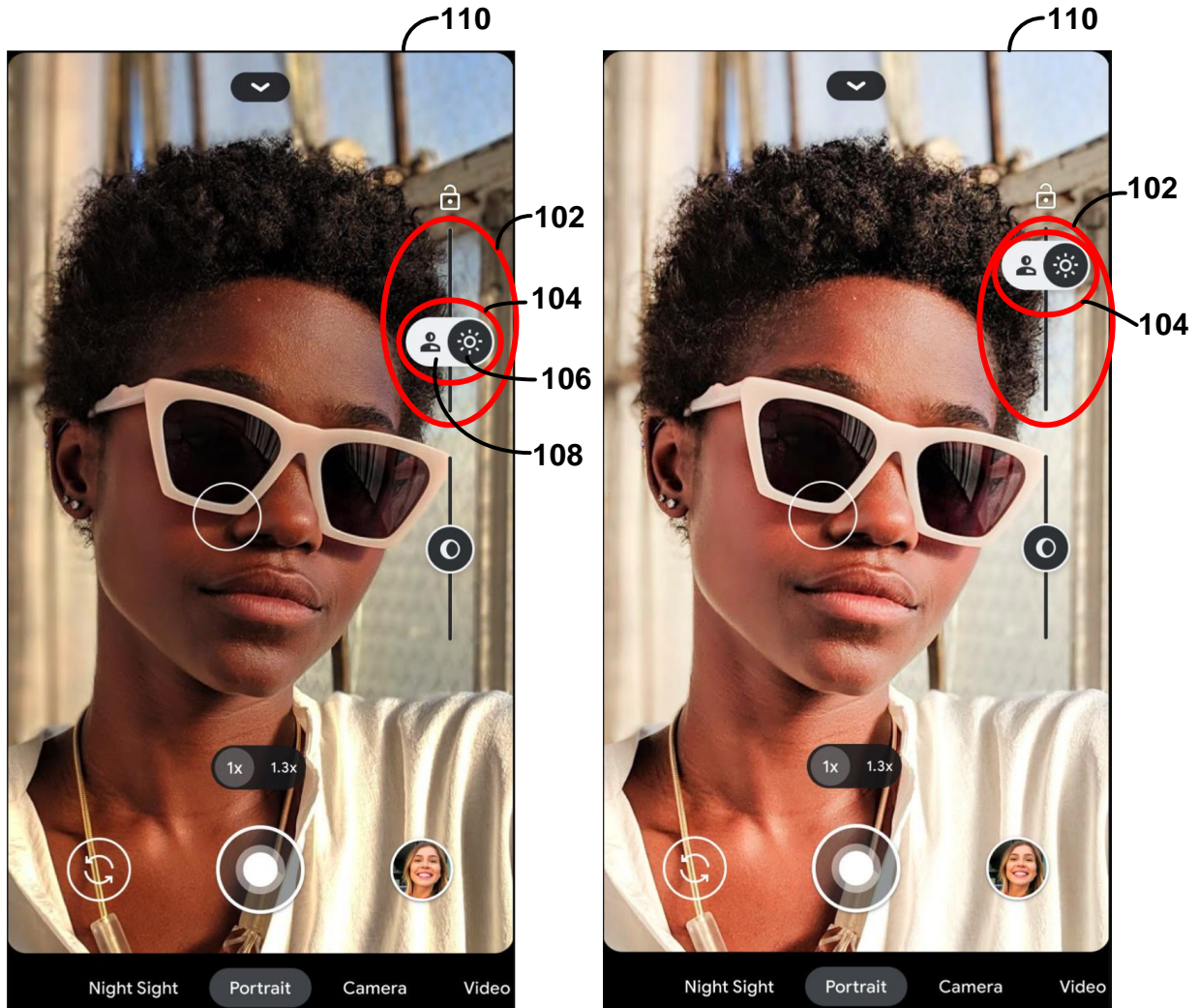


FIG. 1A

FIG. 1B

As shown in FIG. 1A, a computing device may output, for display at a display device, a GUI 110 of an application executing at the computing device, and GUI 110 may include a GUI control 102 with which a user may interact by providing user input (e.g., touch input at a presence-sensitive display device) to adjust the values of a parameter associated with GUI control 102. For example, a user may interact with GUI control 102 to drag thumb control 104 of GUI control 102 to adjust the values of a parameter associated with GUI control 102. In the example of FIG. 1A, GUI 110 may be a GUI of a viewfinder feature of a camera application that presents an image that represents the view of the scene to be captured by the camera of the

computing device, and GUI control 102 is a brightness slider control with which a user may interact to drag thumb control 104 to adjust the scene brightness of the scene to be captured by the camera.

In accordance with the techniques described in this publication, a GUI control, such as GUI control 102, can be toggled between two or more states, so that the GUI control can be used to adjust the values of any suitable two or more different settings, parameters, and the like. Specifically, a GUI control may include a control or element for toggling the GUI control between two or more states. For example, GUI control 102 includes thumb control 104 with which a user may interact to switch between two different states by toggling thumb control 104 between two different toggle positions: toggle position 106 and toggle position 108. When thumb control 104 is toggled to toggle position 106, GUI control 102 is toggled to a first state where GUI control 102 can be used to adjust the values of a first parameter. When thumb control 104 is toggled to toggle position 108, GUI control 102 is toggled to a second state where GUI control 102 can be used to adjust the values of a second parameter different from the first parameter. While the example GUI control 102 can be toggled between two states, the techniques described in this publication are equally applicable to GUI controls that can be toggled between more than two states to adjust more than two different settings, parameters, and the like.

In the example of a camera viewfinder GUI, thumb control 104 may be a toggle control with which a user may interact to switch between a scene brightness state and a face brightness state for GUI control 102. When GUI control 102 is set to the scene brightness state, GUI control 102 can be used to adjust the scene brightness of the scene to be captured by the camera. When GUI control 102 is set to the face brightness state, GUI control 102 can be used to adjust the face brightness of faces in the scene to be captured by the camera

Thumb control 104 can be toggled to select toggle position 106 to set GUI control 102 to the scene brightness state or to select toggle position 108 to set GUI control 102 to the face brightness state. In the example of FIG. 1A, thumb control 104 is toggled to select toggle position 106 to set GUI control 102 to the scene brightness state. As such, a user may interact with GUI control 102 by dragging thumb control 104 to adjust the scene brightness of the scene to be captured by the camera. For example, a user may interact with GUI control 102 by dragging thumb control 104 to increase the scene brightness of the scene to be captured by the camera, as shown in FIG. 1B.

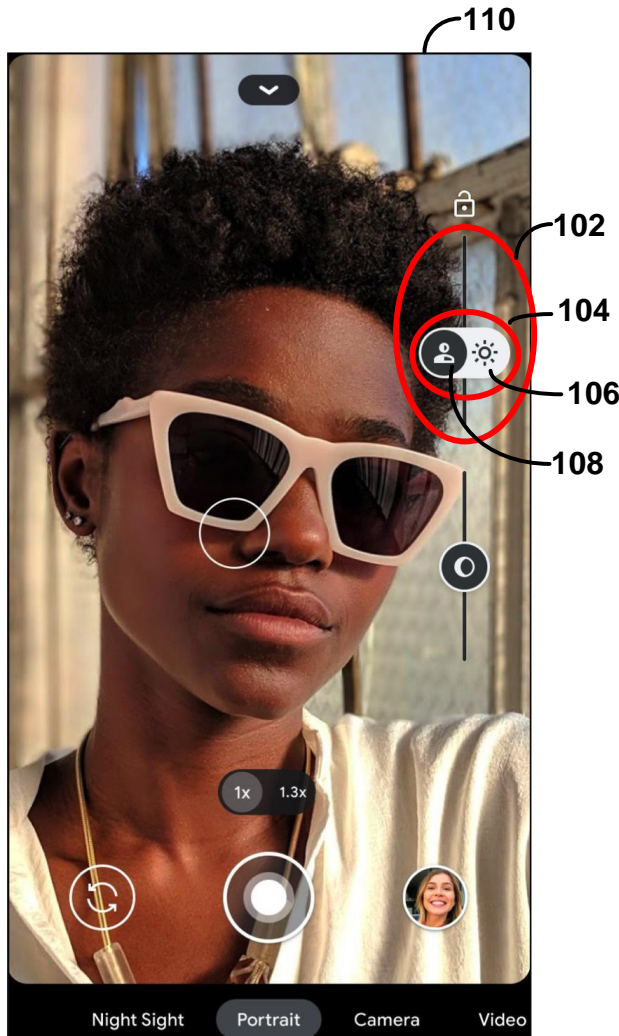


FIG. 1C

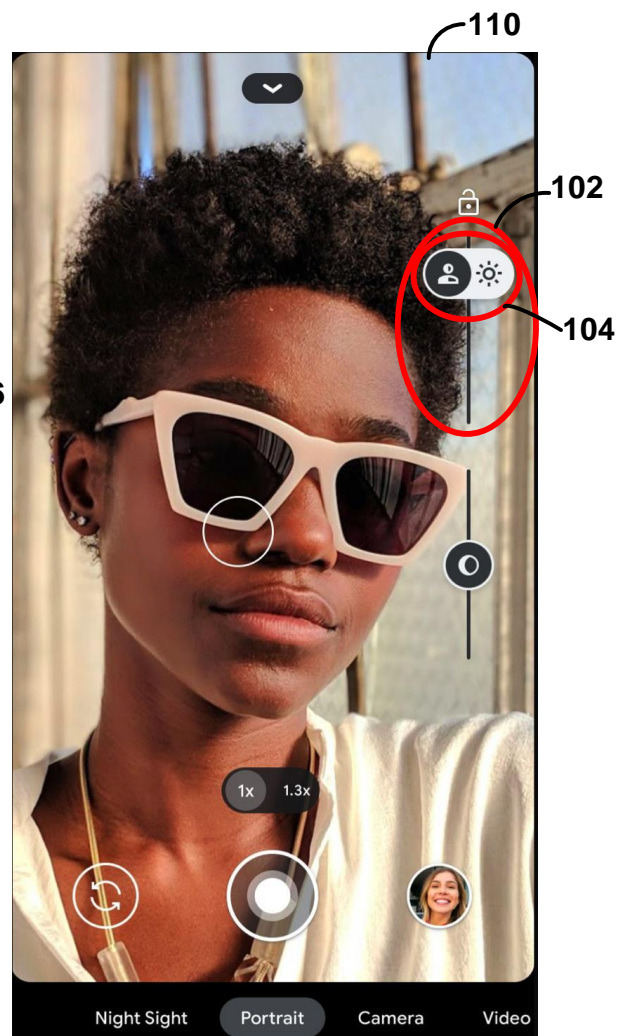


FIG. 1D

When thumb control 104 is toggled to select toggle position 108 to set GUI control 102 to the face brightness state, a user may interact with GUI control 102 by dragging thumb control 104 to adjust the face brightness of faces in the scene to be captured by the camera. As shown in FIG. 1C, thumb control 104 is toggled to select toggle position 108. As such, a user may interact with GUI control 102 by dragging thumb control 104 to adjust the face brightness of faces in the scene to be captured by the camera. For example, a user may interact with GUI control 102 by dragging thumb control 104 to increase the face brightness of faces in the scene to be captured by the camera, as shown in FIG. 1D. As can be seen in FIG. 1D, when GUI control 102 is used to adjust the face brightness of faces in the scene to be captured by the camera, the brightness of the faces in the scene is adjusted, while the brightness of the rest of the scene is unchanged.

Besides the examples described above, the techniques described herein may enable a single GUI control to be used to adjust the values of any suitable two or more different settings, parameters, and the like by toggling the GUI control between two or more states. For example, the camera viewfinder GUI described above may also include a GUI control, such as a slider control that can toggle between adjusting the white balance of the scene and adjusting the white balance of the faces in the scene. In another example, an automotive infotainment system may present a GUI that includes a GUI control that can toggle between adjusting the temperature of the air being outputted by a single air vent in a vehicle and adjusting the temperature of the air being outputted by all of the air vents in the vehicle.

It is noted that the techniques of this disclosure may be combined with any other suitable technique or combination of techniques. As one example, the techniques of this disclosure may be combined with the techniques described in Chinese Patent Application CN 103391363B. As another example, the techniques of this disclosure may be combined with the techniques

described in U.S. Patent Application Publication No. 2015/0331595 A1. As another example the techniques of this disclosure may be combined with the techniques described in Japanese Patent Application JP 2008282204A. As another example, the techniques of this disclosure may be combined with the techniques described in U.S. Patent Application Publication No. 2016/0284070 A1.