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EXTERNAL DISPLAY DEVICE, INFORMATION PROCESSING DEVICE, AND EXTERNAL DISPLAY METHOD

Abstract

A sub display (**10**) (corresponding to an example of an "external display device") includes: a display unit (**11**) that is detachably provided together with a smartphone (**100**) (corresponding to an example of an "information processing device") including a camera (**101**), with respect to a holding portion (**50**) provided so as to be grippable by a user; a communication control unit (**18***a*) that controls communication with a camera application using the camera (**101**) operating on the smartphone (**100**); and a display control unit (**18***c*) that causes the display unit (**11**) to display a sub screen (corresponding to an example of an "external display screen") generated by the camera application and received via the communication control unit (**18***a*).

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Background/Summary

FIELD

[0001] The present disclosure relates to an external display device, an information processing device, and an external display method.

BACKGROUND

[0002] In recent years, the spread of portable information processing devices such as smartphones and tablet terminals is remarkable. In addition, performance of these portable information processing devices has also been rapidly improved, and for example, models including a high-performance out-camera and a high-performance in-camera have become mainstream.

[0003] In such an information processing device, various services such as a social networking service (SNS) become widespread, and application software (hereinafter, referred to as a "camera application") using a camera is often used in order for a user to edit an image shoot by himself or herself or upload the image to various services.

[0004] By the way, when using the camera application, the user can perform shooting using an out-camera, a self-portrait photograph using an in-camera, and the like while viewing a camera-through image of a camera viewpoint displayed on a display device such as a liquid crystal display (LCD) mounted on a main body of the information processing device.

[0005] However, such a display device has a limited display area, and there is a problem that display of various types of information other than a camera-through image, such as operation components and shooting information required at the time of using a camera application, is limited.

[0006] In response to such a problem, a technology has been proposed in which two displays are connected to one camera body, a camera-through image is displayed on one display, and various types of information related to shooting other than the camera-through image are displayed on the other display (See, for example, Patent Literature 1).

CITATION LIST

Patent Literature

[0007] Patent Literature 1: JP 2015-133681 A

SUMMARY

Technical Problem

[0008] However, the above-described technology in the related art has room for further improvement in improving convenience at the time of using the camera application.

[0009] For example, the camera application is usually used in a state where the user directly holds the information processing device. However, in such a state, there are problems that the position and the angle of the camera with respect to the subject are limited, it is difficult to hold the position of the camera, and it is difficult to see a camera-through image displayed on the display device.

[0010] Therefore, the present disclosure proposes an external display device, an information processing device, and an external display method capable of improving convenience at the time of using a camera application.

Solution to Problem

[0011] In order to solve the above problems, one aspect of an external display device according to the present disclosure includes: a display unit that is detachably provided together with an

information processing device including a camera, with respect to a holding portion provided so as to be grippable by a user; a communication control unit that controls communication with a camera application using the camera operating in the information processing device; and a display control unit that causes the display unit to display an external display screen generated by the camera application and received via the communication control unit.

Description

BRIEF DESCRIPTION OF DRAWINGS

[0012] FIG. **1** is a diagram illustrating a configuration example of an external display system according to an embodiment of the present disclosure.

[0013] FIG. **2** is a diagram illustrating a configuration example of a sub display according to the embodiment of the present disclosure.

[0014] FIG. **3** is a block diagram illustrating a configuration example of the sub display according to the embodiment of the present disclosure.

[0015] FIG. **4** is a block diagram illustrating a configuration example of a smartphone according to the embodiment of the present disclosure.

[0016] FIG. **5** is a basic data flow (part 1) between the smartphone and the sub display.

[0017] FIG. **6** is a basic data flow (part 2) between the smartphone and the sub display.

[0018] FIG. **7** is an explanatory diagram of display contents of the sub screen.

[0019] FIG. **8** is a diagram illustrating a display example of the sub screen during still image shooting.

[0020] FIG. **9** is a diagram illustrating a display example of the sub screen during moving image shooting.

[0021] FIG. **10** is a diagram illustrating a display example on the smartphone side when the sub display is connected.

[0022] FIG. **11** is a diagram illustrating a display example of the sub screen when an aspect ratio is changed.

[0023] FIG. **12** is a diagram illustrating a display example of the sub screen at the time of operating a flip key.

[0024] FIG. **13** is an explanatory diagram of the contents of each processing sequence.

[0025] FIG. **14** is a processing sequence in a case where the sub display is connected after the camera application is started.

[0026] FIG. **15** is a diagram illustrating a confirmation example of connection permission confirmation.

[0027] FIG. **16** is a processing sequence in a case where the camera application is started after the sub display is connected.

[0028] FIG. **17** is a processing sequence in a case where the camera application is ended while the sub display is connected.

[0029] FIG. **18** is a processing sequence in a case where the connection of the sub display is disconnected while the sub display is connected.

[0030] FIG. **19** is a processing sequence in a case where the sub display is turned on/off while the sub display is connected.

[0031] FIG. **20** is a processing sequence in a case where the smartphone pauses/resumes while the sub display is connected.

[0032] FIG. **21** is a processing sequence in a case where the external power supply is disconnected while the sub display is connected.

[0033] FIG. **22** is a processing sequence in a case where the remaining amount of the battery of the smartphone is insufficient while the sub display is connected.

[0034] FIG. **23** is a diagram illustrating a confirmation example of end confirmation.
[0035] FIG. **24** is a processing sequence in a case where the camera application is forcibly ended while the sub display is connected.
[0036] FIG. **25** is an explanatory diagram (part 1) of a first modification.
[0037] FIG. **26** is an explanatory diagram (part 2) of the first modification.
[0038] FIG. **27** is an explanatory diagram of a second modification.
[0039] FIG. **28** is a hardware configuration diagram illustrating an example of a computer that implements functions of the smartphone.

DESCRIPTION OF EMBODIMENTS

[0040] Hereinafter, embodiments of the present disclosure are described in detail based on the accompanying drawings. Note that, in each of the following embodiments, the same portions are denoted by the same reference numerals, and redundant description is omitted.
[0041] Furthermore, in the following description, a case where a portable information processing device used by the user is a smartphone **100** is described as an example. Furthermore, in the following description, an external display device according to an embodiment of the present disclosure is a sub display **10**, and the sub display **10** is an external display device connectable to the smartphone **100** as a peripheral device (hereinafter, referred to as an "accessory") of the smartphone **100**.
[0042] In addition, the present disclosure is described according to the following item order. [0043] 1. Overview [0044] 2. Configuration of Sub Display [0045] 3. Configuration of Smartphone [0046] 4. Display Example [0047] 4-1. Display Example of Sub Screen [0048] 4-2. Display Example on Smartphone Side [0049] 4-3. Display Example of Sub Screen During Change of Aspect Ratio [0050] 4-4. Display Example of Sub Screen During Operation of Flip Key [0051] 5. Each Processing Sequence [0052] 5-1. Camera Application Start->Sub Display Connection [0053] 5-2. Sub Display Connection->Camera Application Start [0054] 5-3. Connected->Camera Application End [0055] 5-4. Connected->Sub Display Disconnection [0056] 5-5. Connected->Sub Display Off/On [0057] 5-6. Connected->Pause/Resume of Smartphone [0058] 5-7. Connected->External Power Supply Disconnection [0059] 5-8. Connected->Battery Shortage [0060] 5-9. Connected->Forced End of Camera Application [0061] 6. Modifications [0062] 6-1. First Modification [0063] 6-2. Second Modification [0064] 6-3. Third Modification [0065] 6-4. Other Modifications [0066] 7. Hardware Configuration [0067] 8. Conclusion

1. Overview

[0068] When a user uses a camera application by using the smartphone **100**, the camera application is usually used in a state where the user directly holds the smartphone **100** in the hand. However, in such a state, there are problems that the position and the angle of the camera of the smartphone **100** with respect to a subject are limited, it is difficult to hold the position of the camera, and it is difficult to see a camera-through image displayed on a display device of the smartphone **100**.
[0069] Therefore, in the embodiment of the present disclosure, the sub display **10** is provided as an accessory of the smartphone **100**. FIG. **1** is a diagram illustrating a configuration example of an external display system **1** according to the embodiment of the present disclosure.
[0070] As illustrated in FIG. **1**, the external display system **1** includes the sub display **10**, a microphone **30**, and a holding portion **50**. The sub display **10**, the microphone **30**, and the holding portion **50** are configured as accessories of the smartphone **100**.
[0071] The sub display **10** is a device that functions as a secondary display device of the smartphone **100**. The microphone **30** is provided to collect external voice and input the collected sound to the sub display **10**.
[0072] The holding portion **50** is configured as a holding component of the smartphone **100**. The holding portion **50** is detachably provided with the smartphone **100**. Also, the holding portion **50** is provided, for example, in a rod shape.
[0073] As illustrated in FIG. **1**, in a state where the smartphone **100** is mounted, the holding portion

50 holds the smartphone **100** sideways in a state where the smartphone **100** is orthogonal to the longitudinal direction thereof on one end side of the holding portion **50**. The user grips the other end side of the holding portion **50** holding the smartphone **100** with his/her own hand.
[0074] Furthermore, at this time, the holding portion **50** holds, for example, an out-camera **101***a* of the smartphone **100** so as to face the front side, that is, the user. That is, in such a case, the display device of the main body of the smartphone **100** faces the back side of the smartphone **100** as viewed from the user.
[0075] More specifically, the smartphone **100** has the display device and an in-camera on one main surface and has the out-camera **101***a* on the other main surface, which is the back surface, but has no display device. Compared with the performance of the out-camera **101***a* provided on the main surface having no display device, the in-camera provided on the same main surface as the display device has low performance or equivalent performance. Note that, since a self-portrait photograph is captured while viewing the display surface of the display device, it is common to use an in-camera provided on the same main surface as the display device. On the other hand, also at the time of capturing the self-portrait photograph, there may be a user who desires to use the high-performance out-camera **101***a*.
[0076] Note that, as illustrated in FIG. **1**, the holding portion **50** can be integrally provided with, for example, a remote controller **50***a*, and the user can operate the smartphone **100** via the remote controller **50***a*. The remote controller **50***a* is connected to the smartphone **100**, for example, by Bluetooth (registered trademark) or the like.
[0077] The sub display **10** and the microphone **30** are also detachably provided with respect to the holding portion **50**. The sub display **10** is mounted on the front side of the smartphone **100** in a state where the user faces the display surface in a state where the smartphone **100** is held. Furthermore, the sub display **10** is connected to the smartphone **100**, for example, by a universal serial bus (USB) or the like. The microphone **30** is mounted at a position near the smartphone **100**.
[0078] In the external display system **1** configured in this manner, the sub display **10** functions as an external display device of the smartphone **100** at the time of using a camera application or the like. For example, in the arrangement state of each device illustrated in FIG. **1**, the external display system **1** provides a self-portrait photograph function via a camera application, and the sub display **10** functions as a camera through monitor for such a self-portrait photograph function.
<<2. Configuration of Sub Display>>
[0079] A configuration example of the sub display **10** is specifically described. FIG. **2** is a diagram illustrating the configuration example of the sub display **10** according to the embodiment of the present disclosure. As illustrated in FIG. **2**, the sub display **10** includes a display unit **11**, a first communication unit **12**, a second communication unit **13**, a voice input unit **14**, an on/off switch **15**, a flip key **16**, and a luminance key **17**.
[0080] The display unit **11** is a display device serving as an information display area of the sub display **10**, and is implemented by, for example, the above-described LCD or an organic light emitting diode (OLED). The first communication unit **12** is a connection interface component with the smartphone **100**. The second communication unit **13** is a connection interface component with an external power supply **70** described below.
[0081] In the embodiment of the present disclosure, the first communication unit **12** and the second communication unit **13** are USB Type-C connectors, and the standard is USB 3.0 or more, but the communication form with the smartphone **100** and the external power supply **70** is not limited.
[0082] The voice input unit **14** is a connection interface component with the microphone **30** and is, for example, a 3.5-mm stereo mini terminal. Note that the voice input via the voice input unit **14** can be output from a control unit **18** to the smartphone **100** as a USB audio via the first communication unit **12**.
[0083] The on/off switch **15** is a switch that turns on or off the display unit **11**. The flip key **16** is an operation component for reversing/rotating an image and repeats reversing/rotating an image

displayed on the display unit **11** every time the flip key is pressed. A specific example of the movement is described below with reference to FIG. **12**. The luminance key **17** is an operation component for luminance adjustment of the display unit **11**.

[0084] Next, FIG. **3** is a block diagram illustrating the configuration example of the sub display **10** according to the embodiment of the present disclosure. Note that, in FIG. **3** and FIG. **4** illustrated below, only components required for describing features of the embodiment of the present disclosure are illustrated, and descriptions of general components are omitted.

[0085] In other words, components illustrated in FIGS. **3** and **4** are functionally conceptual and are not necessarily physically configured as illustrated in the drawings. For example, a specific form of distribution and integration of each block is not limited to the illustrated form, and all or a part thereof can be configured to be functionally or physically distributed and integrated in an arbitrary unit according to various loads, usage statuses, and the like.

[0086] In the description using FIGS. **3** and **4**, the description of the already described components may be simplified or omitted.

[0087] As illustrated in FIG. **3**, the sub display **10** includes the display unit **11**, the first communication unit **12**, the second communication unit **13**, the voice input unit **14**, the on/off switch **15**, the flip key **16**, the luminance key **17**, and the control unit **18**.

[0088] Since the display unit **11**, the first communication unit **12**, the second communication unit **13**, the voice input unit **14**, the on/off switch **15**, the flip key **16**, and the luminance key **17** have already been described, the description thereof is omitted here.

[0089] Note that, in a state where the external power supply **70** such as a mobile battery is not connected, the sub display **10** operates by receiving power supply from the smartphone **100** via the first communication unit **12**. Meanwhile, in a state where the external power supply **70** is connected, the sub display can operate by receiving power supply from the external power supply **70** via the second communication unit **13** and charge the smartphone **100** via the first communication unit **12** with the power of the external power supply **70**.

[0090] The control unit **18** is a controller and is implemented by, for example, a central processing unit (CPU), a micro processing unit (MPU), or the like executing various programs stored in a storage unit (not illustrated) using a RAM as a work area. Also, the control unit **18** can be implemented by, for example, an integrated circuit such as an application specific integrated circuit (ASIC) or a field programmable gate array (FPGA).

[0091] In a case where the display unit **11** is implemented by, for example, an LCD, the control unit **18** configures a so-called LCD module integrally with the display unit **11**. The control unit **18** includes a communication control unit **18***a*, a transmission/reception unit **18***b*, and a display control unit **18***c* and implements or executes a function and an action of information processing described below.

[0092] The communication control unit **18***a* controls communication with the smartphone **100** via the first communication unit **12**. Furthermore, the communication control unit **18***a* controls communication with the external power supply **70** via the second communication unit **13**.

[0093] The transmission/reception unit **18***b* transmits and receives various data to and from the smartphone **100** via the first communication unit **12** based on the control of the communication control unit **18***a*. Furthermore, the transmission/reception unit **18***b* transmits and receives various data to and from the external power supply **70** via the second communication unit **13** based on the control of the communication control unit **18***a*.

[0094] The display control unit **18***c* corresponds to a drive unit of the display unit **11** and causes the display unit **11** to display a screen for the sub display **10** transmitted from the smartphone **100**. Hereinafter, the screen for the sub display **10** is appropriately referred to as a “sub screen”.

3. Configuration of Smartphone

[0095] Next, a configuration example of the smartphone **100** is described. FIG. **4** is a block diagram illustrating a configuration example of the smartphone **100** according to the embodiment

of the present disclosure.
[0096] As illustrated in FIG. **4**, the smartphone **100** includes a camera **101**, a communication unit **102**, a display unit **103**, an operation unit **104**, a storage unit **105**, and a control unit **106**.
[0097] The camera **101** is a camera mounted on the main body of the smartphone **100** and includes the above-described out-camera **101***a*. The communication unit **102** is a connection interface component with the sub display **10** and performs USB connection with the sub display **10** in the embodiment of the present disclosure.
[0098] The display unit **103** is a display device that is mounted on the main body of the smartphone **100** and presents visual information, and presents visual information such as a moving image and text and visual information related to an application under the control of the control unit **106** described below. Examples of the display device include the LCD and the OLED described above. The operation unit **104** is an operation component mounted on the main body of the smartphone **100**. Note that the operation unit **104** may be configured integrally with the display unit **103** by a touch panel. Therefore, the operation unit **104** may be a software component, and in the embodiment of the present disclosure, the operation unit **104** may be, for example, a graphical user interface (GUI) operably displayed on the display unit **103** by the camera application.
[0099] The storage unit **105** is implemented by, for example, a semiconductor memory element such as a random access memory (RAM), a read only memory (ROM), or a flash memory. In the example illustrated in FIG. **4**, the storage unit **105** stores application information **105***a*.
[0100] The application information **105***a* is information including a program of the camera application, various parameters used during start of the camera application, and the like.
[0101] The control unit **106** is a controller and is implemented by, for example, a CPU, an MPU, or the like executing various programs stored in the storage unit **105** using the RAM as a work area. Furthermore, the control unit **106** can be implemented, for example, by an integrated circuit such as an ASIC or an FPGA.
[0102] The control unit **106** includes an application execution unit **106***a*, a communication control unit **106***b*, and a transmission/reception unit **106***c* and implements or executes a function and an action of information processing described below.
[0103] The application execution unit **106***a* reads the application information **105***a* stored in the storage unit **105** and executes the camera application. In a state where the sub display **10** is not connected, the application execution unit **106***a* performs display control, on the display unit **103** of the smartphone **100**, of a screen related to the execution of the camera application.
[0104] In addition, in a state where the sub display **10** is connected and a communication connection with the sub display **10** is established, the application execution unit **106***a* performs display control of the sub screen on the sub display **10**. For easy understanding of this point, a basic data flow between the smartphone **100** and the sub display **10** is described with reference to FIGS. **5** and **6**.
[0105] FIG. **5** is a basic data flow (part 1) between the smartphone **100** and the sub display **10**. Also, FIG. **6** is a basic data flow (part 2) between the smartphone **100** and the sub display **10**.
[0106] As shown in FIG. **5**, in the embodiment of the present disclosure, when the smartphone **100** and the sub display **10** are connected by USB, and a communication connection, here, USB connection is established, the smartphone **100** transmits an identification code “show” to the sub display **10** via such a connection.
[0107] The identification code is code information for identifying a valid communication partner as viewed from the sub display **10** and “show” is also a command for displaying image information from the valid communication partner.
[0108] The sub display **10** opens the own display port when being confirmed that it is a valid communication partner by the identification code “show”. Note that the smartphone **100** continues to send the identification code “show” at a predetermined cycle (for example, every 400 ms), and the sub display **10** opens the port while receiving the “show”.

[0109] Meanwhile, as illustrated in FIG. **6**, the smartphone **100** transmits an identification code "stop" to the sub display **10** when the application is ended. The sub display **10** receives the "stop" and closes the own display port.
[0110] Note that FIGS. **5** and **6** merely illustrate a basic data flow illustrating features of the embodiment of the present disclosure. Processing sequences of various situations are described below with reference to FIG. **13** and subsequent drawings.
[0111] The description returns to FIG. **4**. The communication control unit **106***b* controls communication with the sub display **10** via the communication unit **102** according to the execution content of the camera application of the application execution unit **106***a*. The transmission/reception unit **106***c* transmits and receives various data to and from the sub display **10** via the communication unit **102** based on the control of the communication control unit **106***b*.
4. Display Example
<4-1. Display Example of Sub Screen>
[0112] Next, a display example of various types of information in the external display system **1** is described. First, display contents of the sub screen are described.
[0113] FIG. **7** is an explanatory diagram of display contents of the sub screen. Also, FIG. **8** is a diagram illustrating a display example of the sub screen during still image shooting. Also, FIG. **9** is a diagram illustrating a display example of the sub screen during moving image shooting. Note that "F" illustrated in FIGS. **8** and **9** schematically represents a subject, and the same applies to FIGS. **11** and **12** described below.
[0114] The sub display **10** displays a sub screen including various types of information illustrated in FIG. **7** based on display control of the smartphone **100**. For example, FIG. **8** illustrates an example in which, at the time of still image shooting, the sub display **10** displays, on the display unit **11**, a sub screen including a camera-through image including a subject, a focus frame indicated by a thick rectangle in the drawing, a remaining amount of the battery of the smartphone **100**, and a high temperature detection mark indicated by a triangle in the drawing.
[0115] Furthermore, for example, FIG. **9** illustrates an example in which the sub display **10** displays a sub screen including a Rec status and an Audio level on the display unit **11** in addition to the display content of FIG. **8** at the time of moving image shooting.
<4-2. Display Example on Smartphone Side>
[0116] Meanwhile, while the sub display **10** is connected to the smartphone **100**, and the sub screen is displayed on the sub display **10**, a screen with the following display contents is displayed on the display unit **103** of the smartphone **100**. FIG. **10** is a diagram illustrating a display example on the smartphone **100** side when the sub display **10** is connected.
[0117] As illustrated in FIG. **10**, while the sub screen is displayed on the sub display **10**, the smartphone **100** sets a preview area in which the camera-through image is displayed when the sub display **10** is not connected to, for example, black, and then displays a message such as "sub display being connected" on the display unit **103**.
[0118] Note that, as illustrated in FIG. **10**, for an application operation area and the application information area, it is possible to display operation components of a camera application that can be operated on the smartphone **100** side even when the sub display **10** is connected.
<4-3. Display Example of Sub Screen During Change of Aspect Ratio>
[0119] For example, FIG. **10** illustrates an example in which an aspect ratio change button asp is displayed. A display example in a case where the aspect ratio change button asp is operated is described.
[0120] FIG. **11** is a diagram illustrating a display example of the sub screen when the aspect ratio is changed. In a case where the aspect ratio change button asp is operated, as illustrated in FIG. **11**, the sub display **10** can display the sub screen on the display unit **11** while switching the aspect ratio at each ratio such as "16:9", "3:2", "4:3", and "1:1" based on the display control of the smartphone **100**.

<4-4. Display Example of Sub Screen During Operation of Flip Key>
[0121] Next, a display example of the sub screen at the time of operating the flip key **16** is described. FIG. **12** is a diagram illustrating a display example of the sub screen at the time of operating the flip key **16**.
[0122] In the arrangement state of each device illustrated in FIG. **1**, it is described above that the external display system **1** provides a self-portrait photograph function via a camera application, and the sub display **10** functions as a camera through monitor for such a self-portrait photograph function.
[0123] Normally, when a self-portrait photograph is captured by using the in-camera of the smartphone **100**, a horizontally flipped (that is, mirroring) camera-through image is displayed in the preview area by default. Therefore, it is preferable that the same display is performed on the sub screen displayed on the sub display **10** according to the embodiment of the present disclosure from the viewpoint of the operability of the user.
[0124] Therefore, the sub display **10** performs similar display for the camera-through image based on the display control of the smartphone **100**. However, each GUI displayed together with the camera-through image may be excluded from the target.
[0125] Specifically, when USB connection is established with the smartphone **100**, and the display port is opened by the identification code “show”, the sub display **10** displays a sub screen in which a camera-through image is horizontally flipped by default as illustrated in the upper right of FIG. **12**.
[0126] However, at this time, GUIs such as a high temperature detection mark, a remaining amount of the battery of the smartphone **100**, a Rec status, and an audio level are not set as horizontally flipping targets. The focus frame is set as a horizontally flipping target.
[0127] Then, when the flip key **16** is pressed, the camera-through image and the focus frame are horizontally flipped as illustrated in the upper left of FIG. **12**. However, also here, GUIs such as a high temperature detection mark, a remaining amount of the battery of the smartphone **100**, a Rec status, and an audio level are not set as horizontally flipping targets.
[0128] This is because, when the high temperature detection mark, the remaining amount of the battery of the smartphone **100**, the Rec status, the Audio level, and the like are horizontally flipped, the shape of each GUI, the direction of the indicator of each level, characters, and the like are reversed, meaning is less likely to be conveyed to the user, and usability is deteriorated.
[0129] Note that, when the flip key **16** is subsequently pressed, the sub screen is rotated by 180 degrees as illustrated in the lower left of FIG. **12**. At this time, regarding the 180-degree rotation, each GUI other than the above-described horizontally flipping target is also the target.
[0130] Then, when the flip key **16** is further pressed, as illustrated in the lower right of FIG. **12**, the camera-through image and the focus frame are horizontally flipped from the lower left sub screen. Here, the GUIs other than the above-described horizontally flipping target are also not the horizontally flipping target.
[0131] Then, when the flip key **16** is further pressed, the sub screen is rotated by 180 degrees and returns to the default display as illustrated in the upper right of FIG. **12**.
[0132] Note that, in the description using FIG. **12**, an example is described in which the sub screen is flipped or rotated by the flip key **16**, but the present disclosure is not limited thereto, and for example, the sub screen may be flipped or rotated according to a sensor value of an acceleration sensor mounted on the smartphone **100**, similarly to the case illustrated in FIG. **12**.
[0133] In addition, for example, after the sub display **10** includes the acceleration sensor, the sub screen may be flipped or rotated according to the sensor value of the acceleration sensor of the sub display **10** as illustrated in FIG. **12**.
[0134] Note that the input by the flip key **16** and the acquisition of the sensor value of the acceleration sensor can also be regarded as the occurrence of a predetermined event related to the horizontal flip or the vertical rotation of the sub screen.

5. Each Processing Sequence

[0135] Next, each processing sequence executed by the external display system **1** is described. For easy understanding of the description, contents of each processing sequence described below are provided in FIG. **13**. FIG. **13** is an explanatory diagram of the contents of each processing sequence. An "explanatory diagram" in the drawing is a corresponding diagram when each processing sequence is described.

<5-1. Camera Application Start->Sub Display Connection>

[0136] FIG. **14** is a processing sequence in a case where the sub display **10** is connected after the camera application is started. The "Display Manager" in the drawing refers to a monitoring process of each display connected to the smartphone **100**. A "USB Manager" refers to a monitoring process of a USB port, in the embodiment of the present disclosure, the communication unit **102**. These monitoring processes correspond to middleware that resides and is executed in the control unit **18**.

[0137] Also, "USB Device Connection" in the drawing indicates communication connection established between the smartphone **100** and the sub display **10**. Also, "Presentation" corresponds to a part of the function of the application execution unit **106***a* and performs switching to the sub screen display for displaying the sub screen on the sub display **10**.

[0138] As illustrated in FIG. **14**, it is assumed that a camera application is first started (Step S**101**). It is assumed that the sub display **10** is connected via USB (Step S**102**).

[0139] Then, the USB manager detects the connection (Step S**103**) and notifies the camera application of the connection. The camera application that receives such a notification performs connection permission confirmation (Step S**104**).

[0140] FIG. **15** is a diagram illustrating a confirmation example of connection permission confirmation. The camera application displays a dialog as illustrated in FIG. **15** on the camera application screen of the display unit **103** and receives the confirmation of the user. If "Yes", the sub display **10** is connected. If "No", the sub display **10** is not connected. Here, it is assumed that "Yes" is input.

[0141] The description returns to FIG. **14**. Then, the camera application prepares a sub display space (Step S**105**). The sub display space is a virtual space for displaying the sub screen and is also referred to as a "surface".

[0142] The camera application generates the sub display space in Step S**105** and thereafter outputs the sub display space to display the sub screen on the sub display **10** via the USB device connection.

[0143] Then, the camera application transmits the identification code "show" to the sub display **10** at a predetermined cycle (Step S**106**). When the identification code "show" is confirmed (Step S**107**), the sub display **10** opens the display port (Step S**108**).

[0144] Then, the Display Manager detects the opening of the port (Step S**109**) and notifies the camera application of the opening. The camera application that receives this notification starts display control of the sub screen (Step S**110**) and starts mirroring. Then, a sub screen is output.

[0145] In response to the output, the presentation is switched to the sub screen display (Step S**111**), and the sub screen is transmitted to the sub display **10** via the USB device connection. Note that the procedure after Step S**105** can be performed by using, for example, an application programming interface (API) of an open graphics library (OpenGL) system.

<5-2. Sub Display Connection-Camera Application Start>

[0146] Next, FIG. **16** is a processing sequence in a case where the camera application is started after the sub display **10** is connected.

[0147] As illustrated in FIG. **16**, first, it is assumed that the sub display **10** is connected via USB (Step S**201**). Then, the USB manager detects such connection (Step S**202**).

[0148] Then, it is assumed that the camera application is started (Step S**203**). Then, the camera application exchanges the presence or absence of connection with the USB manager and performs connection permission confirmation in a case where the sub display **10** is connected (Step S**204**).

Step S**204** is similar to Step S**104** described above. Thereafter, a processing sequence similar to that in Step S**104** is executed.

<5-3. Connected-Camera Application End>

[0149] Next, FIG. **17** is a processing sequence in a case where the camera application is ended while the sub display **10** is connected.

[0150] As illustrated in FIG. **17**, during connection of the sub display **10**, the camera application transmits the identification code "show" to the sub display **10** for each predetermined cycle (Step S**301**), and the sub display **10** confirms the identification code "show" (Step S**302**). Then, while "show" can be confirmed, the sub display **10** opens the display port.

[0151] Meanwhile, the camera application appropriately performs display control of the sub screen (Step S**303**), transmits the sub screen to the sub display **10**, and the sub display **10** that receives the sub screen displays the sub screen (Step S**304**).

[0152] Then, for example, when receiving an end operation of the user, the camera application transmits an identification code "stop" to the sub display **10** (Step S**305**). When receiving and confirming such "stop" (Step S**306**), the sub display **10** closes the display port (Step S**307**).

[0153] Then, the Display Manager detects the closing of the port (Step S**308**) and notifies the camera application of the closing. The camera application that receives this notification ends the display control of the sub screen (Step S**309**), starts mirroring, and ends the camera application (Step S**310**).

<5-4. Connected-Sub Display Disconnection>

[0154] Next, FIG. **18** is a processing sequence in a case where the connection of the sub display **10** is disconnected while the sub display **10** is connected. Note that, since Steps S**401** to S**404** in FIG. **18** are similar to Steps S**301** to S**304** in FIG. **17**, the processing sequence from Step S**405** is described here.

[0155] As illustrated in FIG. **18**, it is assumed that the connection of the sub display **10** is disconnected during the connection of the sub display **10** (Step S**405**). Then, the Display Manager detects the disconnection (Step S**406**) and notifies the camera application of the disconnection.

[0156] The camera application that receives such notification ends the display control of the sub screen (Step S**407**). Meanwhile, disconnection is also detected in the USB manager (Step S**408**), and the USB device connection also detects the disconnection (Step S**409**).

[0157] Then, the camera application stops transmission of the identification code (Step S**410**) and displays the camera-through image on the display unit **103** of the smartphone **100**. That is, the camera application returns preview screen display on the display unit **103** of the smartphone **100** (Step S**411**).

<5-5. Connected-Sub Display Off/On>

[0158] Next, FIG. **19** is a processing sequence in a case where the sub display **10** is turned on/off while the sub display **10** is connected.

[0159] As illustrated in FIG. **19**, it is assumed that the display unit **11** of the sub display **10** is turned off by the on/off switch **15** during the connection of the sub display **10** (Step S**501**).

[0160] Then, the Display Manager detects the display-off (Step S**502**) and notifies the camera application of the display-off. The camera application that receives this notification ends the display control of the sub screen (Step S**503**) and returns the preview screen display on the display unit **103** of the smartphone **100** (Step S**504**).

[0161] Meanwhile, the camera application transmits the identification code "show" to the sub display **10** at a predetermined cycle (Step S**505**).

[0162] Then, when the display unit **11** of the sub display **10** is turned on by the on/off switch **15** (Step S**506**), the Display Manager detects such display-on (Step S**507**) and notifies the camera application of the display-on.

[0163] The camera application that receives this notification starts display control of the sub screen (Step S**508**) and starts mirroring. Then, a sub screen is output.

[0164] In response to the output, the presentation is switched to the sub screen display (Step S**509**), and the sub screen is transmitted to the sub display **10** via the USB device connection.

<5-6. Connected->Pause/Resume of Smartphone>

[0165] Next, FIG. **20** is a processing sequence in a case where the smartphone **100** pauses/resumes while the sub display **10** is connected. Note that, since Steps S**601** to S**604** in FIG. **20** are similar to Steps S**301** to S**304** in FIG. **17**, the processing sequence from Step S**605** is described here.

[0166] As illustrated in FIG. **20**, it is assumed that a Pause operation is performed in the smartphone **100** while the sub display **10** is connected (see "Pause" in the drawing). Then, the camera application ends the display control of the sub screen (Step S**605**) and transmits the identification code "stop" toward the sub display **10** (Step S**606**).

[0167] The sub display **10** receives and confirms such "stop" (Step S**607**) and closes the display port (Step S**608**).

[0168] Then, it is assumed that an operation of Resume or Unlock Screen is performed on the smartphone **100** in such a state (see "Resume or Unlock Screen" in the drawing). Then, thereafter, the processing sequence No. 2 illustrated in FIG. **13**, that is, the processing sequence in a case where the camera application is started after the sub display **10** is connected, as illustrated in FIG. **16**, is executed.

<5-7. Connected->External Power Supply Disconnection>

[0169] Next, FIG. **21** is a processing sequence in a case where the external power supply **70** is disconnected while the sub display **10** is connected. Note that, since Steps S**701** to S**704** in FIG. **21** are similar to Steps S**301** to S**304** in FIG. **17**, the processing sequence from Step S**705** is described here.

[0170] As illustrated in FIG. **21**, it is assumed that the external power supply **70** connected to the sub display **10** is disconnected while the smartphone **100** is connected to the sub display **10** (Step S**705**). Then, the processing sequence No. 4 illustrated in FIG. **13**, that is, the processing sequence in a case where the connection of the sub display **10** is disconnected while the sub display **10** is connected, as illustrated in FIG. **18**, is executed.

[0171] Thereafter, the sub display **10** is restarted (Step S**706**). Then, thereafter, the processing sequence No. 1 illustrated in FIG. **13**, that is, the processing sequence in a case where the sub display **10** is connected after the camera application is started, as illustrated in FIG. **14**, is executed.

<5-8. Connected-Battery Shortage>

[0172] Next, FIG. **22** is a processing sequence in a case where the remaining amount of the battery of the smartphone **100** is insufficient while the sub display **10** is connected. Note that, since Steps S**801** to S**804** in FIG. **22** are similar to Steps S**301** to S**304** in FIG. **17**, the processing sequence from Step S**805** is described here.

[0173] As illustrated in FIG. **22**, it is assumed that the camera application detects a battery shortage of the smartphone **100** while the sub display **10** is connected (see "Law Battery" in FIG. **22**).

[0174] Then, the camera application performs end confirmation (Step S**805**). FIG. **23** is a diagram illustrating a confirmation example of end confirmation. The camera application displays a dialog as illustrated in FIG. **23** on the camera application screen of the display unit **103** and receives the confirmation of the user.

[0175] The description returns to FIG. **22**. When receiving the confirmation of the user, the camera application transmits an identification code "stop" to the sub display **10** (Step S**806**). The sub display **10** receives and confirms such "stop" (Step S**807**) and closes the display port (Step S**808**).

[0176] Also, the camera application ends the display control of the sub screen (Step S**809**), starts mirroring, and ends the camera application (Step S**810**).

<5-9. Connected->Forced End of Camera Application>

[0177] Next, FIG. **24** is a processing sequence in a case where the camera application is forcibly ended while the sub display **10** is connected. Note that, since Steps S**901** to S**904** in FIG. **24** are similar to Steps S**301** to S**304** in FIG. **17**, the processing sequence from Step S**905** is described

here.
[0178] As illustrated in FIG. **24**, it is assumed that the camera application is unexpectedly forcibly ended while the sub display **10** is connected. In such a case, transmission of the identification code "show" is also forcibly ended, but the sub display **10** determines timeout of the identification code "show", and when the identification code "show" is not arrived for 1000 msec, for example, the sub display **10** detects timeout (Step S**905**).
[0179] Also, when timeout is detected, the sub display **10** closes the display port (Step S**906**).
6. Modifications
[0180] Meanwhile, the above-described embodiments of the present disclosure can include some modifications.
<6-1. First Modification>
[0181] In the embodiment of the present disclosure described above, as illustrated in FIG. **1**, a case where the sub display **10** functions as a camera through monitor for a self-portrait photograph function and is substituted for the display unit **103** of the smartphone **100** is described as an example, but the present disclosure is not limited thereto.
[0182] For example, the display unit **103** of the smartphone **100** may function as a display device for a main screen for a camera application, and the sub display **10** may be used merely as an auxiliary display device.
[0183] FIG. **25** is an explanatory diagram (part 1) of the first modification. Also, FIG. **26** is an explanatory diagram (part 2) of the first modification.
[0184] As illustrated in FIG. **25**, the holding portion **50** may have a longer dimension than the case of FIG. **1**. In addition, the smartphone **100** may be held at a position close to the distal end of the holding portion **50**, and the sub display **10** may be held at a position close to the hand of the user.
[0185] Furthermore, at this time, the smartphone **100** may be arranged such that the display surface of the display unit **103** faces the user, similarly to the sub display **10**. Therefore, in this case, the out-camera **101***a* of the smartphone **100** faces the subject with respect to the user.
[0186] In such a configuration, by raising the holding portion **50**, the user can position the out-camera **101***a* at a position higher than usual and perform shooting other than a self-portrait photograph via the camera application by using the remote controller **50***a* (not illustrated) or the like.
[0187] Note that, by positioning the out-camera **101***a* at a position higher than usual, it is difficult for the user to see the display unit **103** of the smartphone **100**. However, as illustrated in FIG. **25**, by displaying the camera-through image supplementarily on the sub display **10** close to the hand, the user can perform shooting while confirming the camera-through image.
[0188] Incidentally, in the case of the configuration example illustrated in FIG. **25**, the default display of the sub display **10** is different from that illustrated in FIG. **12** and is not for a self-portrait photograph, that is, the camera-through image, the focus frame, and the like are not horizontally flipped, as illustrated in FIG. **26**.
[0189] As described above, by using the sub display **10** as an auxiliary display device in a case where it is difficult to see the smartphone **100**, it is possible to enhance the convenience of the user including the ease of viewing and the like.
<6-2. Second Modification>
[0190] FIG. **27** is an explanatory diagram of the second modification. Similarly to the first modification, in the configuration in which the display surfaces of the smartphone **100** and the sub display **10** are arranged to face the user, the sub display **10** may be configured as a dedicated device that supplementarily displays, for example, a histogram of shoot data.
[0191] As described above, by using the sub display **10** as a display device that displays image information that cannot be displayed on the smartphone **100** having a limited display area in an expanded manner, it is possible to enhance the convenience of the user including the ease of viewing and the like.

<6-3. Third Modification>
[0192] Also, in addition to this, for example, the backlight of the sub display **10** may be configured to function instead of the flash light at the time of shooting a self-portrait photograph.
[0193] In addition, several patterns of effects at the time of shooting may be prepared and freely selected at the time of shooting.
[0194] In addition, the display unit **11** of the sub display **10** may be configured by a touch panel to be able to receive a touch operation, and a place touched by the user may be set as a target of touch tracking.
<6-4. Other Modifications>
[0195] Also, among the processes described in the above-described embodiments of the present disclosure, all or a part of the processes described as being performed automatically can be performed manually, or all or a part of the processes described as being performed manually can be performed automatically by a known method. In addition, the processing procedure, specific names, and information including various data and parameters disclosed in the document and the drawings can be arbitrarily changed unless otherwise specified. For example, the various types of information illustrated in each figure are not limited to the illustrated information.
[0196] In addition, each component of each device illustrated in the drawings is functionally conceptual and is not necessarily physically configured as illustrated in the drawings. That is, a specific form of distribution and integration of each device is not limited to the illustrated form, and all or a part thereof can be configured to be functionally or physically distributed and integrated in an arbitrary unit according to various loads, usage statuses, and the like.
[0197] In addition, the embodiments of the present disclosure described above can be appropriately combined in a region in which the processing contents do not contradict each other. Furthermore, the order of each step illustrated in the sequence diagram or the flowchart according to the present embodiment can be changed as appropriate.
7. Hardware Configuration
[0198] The smartphone **100** and the like according to the embodiment of the present disclosure described above are implemented, for example, by a computer **1000** having a configuration as illustrated in FIG. **28**. The smartphone **100** is described as an example. FIG. **28** is a hardware configuration diagram illustrating an example of the computer **1000** that implements functions of the smartphone **100**. The computer **1000** includes a CPU **1100**, a RAM **1200**, a ROM **1300**, a hard disk drive (HDD) **1400**, a communication interface **1500**, and an input/output interface **1600**. Each unit of the computer **1000** is connected by a bus **1050**.
[0199] The CPU **1100** operates based on a program stored in the ROM **1300** or the HDD **1400** and controls each unit. For example, the CPU **1100** loads the program stored in the ROM **1300** or the HDD **1400** into the RAM **1200** and executes processing corresponding to various programs.
[0200] The ROM **1300** stores a boot program such as a basic input output system (BIOS) executed by the CPU **1100** at the time of starting the computer **1000**, a program depending on hardware of the computer **1000**, and the like.
[0201] The HDD **1400** is a computer-readable recording medium that records a program executed by the CPU **1100**, data used by the program, and the like in a non-transitory manner.
[0202] Specifically, the HDD **1400** is a recording medium that records a program according to the present disclosure which is an example of program data **1450**.
[0203] The communication interface **1500** is an interface for the computer **1000** to connect to an external network **1550** (for example, the Internet). For example, the CPU **1100** receives data from another device or transmits data generated by the CPU **1100** to another device via the communication interface **1500**.
[0204] The input/output interface **1600** is an interface for connecting an input/output device **1650** and the computer **1000**. For example, the CPU **1100** receives data from an input device such as a keyboard and a mouse via the input/output interface **1600**. In addition, the CPU **1100** transmits data

to an output device such as a display, a speaker, or a printer via the input/output interface **1600**. Furthermore, the input/output interface **1600** may function as a media interface that reads a program or the like recorded in a predetermined recording medium (media). The medium is, for example, an optical recording medium such as a digital versatile disc (DVD) or a phase change rewritable disk (PD), a magneto-optical recording medium such as a magneto-optical disk (MO), a tape medium, a magnetic recording medium, or a semiconductor memory.

[0205] For example, when the computer **1000** functions as the smartphone **100** according to the embodiment, the CPU **1100** of the computer **1000** implements the functions of the control unit **106** by executing a program loaded onto the RAM **1200**. In addition, the HDD **1400** stores a program according to the present disclosure and data in the storage unit **105**. Note that the CPU **1100** reads the program data **1450** from the HDD **1400** and executes the program data, but as another example, these programs may be acquired from another device via the external network **1550**.

8. Conclusion

[0206] As described above, according to an embodiment of the present disclosure, the sub display **10** (corresponding to an example of an "external display device") includes: the display unit **11** that is detachably provided together with the smartphone **100** (corresponding to an example of an "information processing device") including the camera **101**, with respect to the holding portion **50** provided so as to be grippable by the user; the communication control unit **18***a* that controls communication with the camera application using the camera **101** operating on the smartphone **100**; and the display control unit **18***c* that causes the display unit **11** to display a sub screen (corresponding to an example of an "external display screen") generated by the camera application and received via the communication control unit **18***a*. As a result, convenience at the time of using the camera application can be improved.

[0207] Although each embodiment of the present disclosure has been described above, the technical scope of the present disclosure is not limited to the embodiments described above as it is, and various modifications can be made without departing from the gist of the present disclosure. In addition, components of different embodiments and modifications may be appropriately combined.

[0208] Furthermore, the effects of each embodiment described in the present specification are merely examples and are not limited, and other effects may be provided.

[0209] Note that the present technology can also have the following configurations.

(1)

[0210] An external display device comprising: [0211] a display unit that is detachably provided together with an information processing device including a camera, with respect to a holding portion provided so as to be grippable by a user; [0212] a communication control unit that controls communication with a camera application using the camera operating in the information processing device; and [0213] a display control unit that causes the display unit to display an external display screen generated by the camera application and received via the communication control unit.

(2)

[0214] The external display device according to (1), [0215] wherein the camera is an out-camera, and [0216] the display unit [0217] is held by the holding portion such that a display surface of the display unit faces the user together with the out-camera.

(3)

[0218] The external display device according to (2), [0219] wherein the external display screen includes at least a camera-through image of the out-camera, and [0220] the display control unit [0221] causes the display unit to display by default the external display screen in which the camera-through image is horizontally flipped.

(4)

[0222] The external display device according to (3), [0223] wherein the external display screen further includes a GUI related to an operation of the camera application, and [0224] the display control unit [0225] causes the display unit to display the external display screen in which a part of

the GUI is excluded from the horizontally flipping target.
(5)
[0226] The external display device according to (3), [0227] wherein the display control unit [0228] causes the display unit to display the external display screen that is horizontally flipped or vertically rotated when a predetermined event related to horizontal flip or vertical rotation occurs.
(6)
[0229] The external display device according to any one of (1) to (5), [0230] wherein the communication control unit [0231] enables display of the external display screen on the display unit by opening a port of the display unit while a specific identification code transmitted at a predetermined cycle is received from the information processing device after communication connection with the information processing device is established.
(7)
[0232] The external display device according to (6), [0233] wherein the communication control unit [0234] disables display of the external display screen on the display unit by closing the port of the display unit when an identification code indicating end of display is received from the information processing device.
(8)
[0235] The external display device according to any one of (1) to (7), [0236] wherein the external display device is provided to be operable by receiving power supply from the information processing device or an external power supply.
(9)
[0237] An information processing device comprising: [0238] a camera that is detachably provided together with an external display device, with respect to a holding portion provided so as to be grippable by a user; [0239] a communication control unit that controls communication with the external display device; and [0240] an application execution unit that executes a camera application using the camera and causes the external display device to display an external display screen generated by the camera application and transmitted via the communication control unit.
(10)
[0241] An external display method executed by an external display device including a display unit that is detachably provided together with an information processing device including a camera, with respect to a holding portion provided so as to be grippable by a user, the method comprising: [0242] controlling communication with a camera application using the camera operating in the information processing device; and [0243] causing the display unit to display an external display screen generated by the camera application and received via the control of the communication.
REFERENCE SIGNS LIST
[0244] **1** EXTERNAL DISPLAY SYSTEM [0245] **10** SUB DISPLAY [0246] **11** DISPLAY UNIT [0247] **12** FIRST COMMUNICATION UNIT [0248] **13** SECOND COMMUNICATION UNIT [0249] **14** VOICE INPUT UNIT [0250] **15** ON/OFF SWITCH [0251] **16** FLIP KEY [0252] **17** LUMINANCE KEY [0253] **18** CONTROL UNIT [0254] **18***a* COMMUNICATION CONTROL UNIT [0255] **18***b* TRANSMISSION/RECEPTION UNIT [0256] **18***c* DISPLAY CONTROL UNIT [0257] **30** MICROPHONE [0258] **50** HOLDING PORTION [0259] **50***a* REMOTE CONTROLLER [0260] **70** EXTERNAL POWER SUPPLY [0261] **100** SMARTPHONE [0262] **101** CAMERA [0263] **101***a* OUT-CAMERA [0264] **102** COMMUNICATION UNIT [0265] **103** DISPLAY UNIT [0266] **104** OPERATION UNIT [0267] **105** STORAGE UNIT [0268] **105***a* APPLICATION INFORMATION [0269] **106** CONTROL UNIT [0270] **106***a* APPLICATION EXECUTION UNIT [0271] **106***b* COMMUNICATION CONTROL UNIT [0272] **106***c* TRANSMISSION/RECEPTION UNIT

Claims

1. An external display device comprising: a display unit that is detachably provided together with an information processing device including a camera, with respect to a holding portion provided so as to be grippable by a user; a communication control unit that controls communication with a camera application using the camera operating in the information processing device; and a display control unit that causes the display unit to display an external display screen generated by the camera application and received via the communication control unit.

2. The external display device according to claim 1, wherein the camera is an out-camera, and the display unit is held by the holding portion such that a display surface of the display unit faces the user together with the out-camera.

3. The external display device according to claim 2, wherein the external display screen includes at least a camera-through image of the out-camera, and the display control unit causes the display unit to display by default the external display screen in which the camera-through image is horizontally flipped.

4. The external display device according to claim 3, wherein the external display screen further includes a GUI related to an operation of the camera application, and the display control unit causes the display unit to display the external display screen in which a part of the GUI is excluded from the horizontally flipping target.

5. The external display device according to claim 3, wherein the display control unit causes the display unit to display the external display screen that is horizontally flipped or vertically rotated when a predetermined event related to horizontal flip or vertical rotation occurs.

6. The external display device according to claim 1, wherein the communication control unit enables display of the external display screen on the display unit by opening a port of the display unit while a specific identification code transmitted at a predetermined cycle is received from the information processing device after communication connection with the information processing device is established.

7. The external display device according to claim 6, wherein the communication control unit disables display of the external display screen on the display unit by closing the port of the display unit when an identification code indicating end of display is received from the information processing device.

8. The external display device according to claim 1, wherein the external display device is provided to be operable by receiving power supply from the information processing device or an external power supply.

9. An information processing device comprising: a camera that is detachably provided together with an external display device, with respect to a holding portion provided so as to be grippable by a user; a communication control unit that controls communication with the external display device; and an application execution unit that executes a camera application using the camera and causes the external display device to display an external display screen generated by the camera application and transmitted via the communication control unit.

10. An external display method executed by an external display device including a display unit that is detachably provided together with an information processing device including a camera, with respect to a holding portion provided so as to be grippable by a user, the method comprising: controlling communication with a camera application using the camera operating in the information processing device; and causing the display unit to display an external display screen generated by the camera application and received via the control of the communication.