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WEARABLE DEVICE AND METHOD FOR IDENTIFYING TOUCH INPUT, AND NON-TRANSITORY COMPUTER-READABLE STORAGE MEDIUM

Abstract

A control circuit of a wearable device can be configured to: acquire information indicating the position of the wearable device through at least one sensor of the wearable device; identify, based on the information indicating the position differing from a reference position, in a region in which a touch input can be received through a touch sensor of the wearable device, a first partial region located along the periphery of the region and a second partial region surrounded by the first partial region; restrain provision, to at least one processor of the wearable device, in response to identification of points of contact in the first partial region through the touch sensor, of data for identifying, as a touch input, at least some points of contact in the first partial region; and provide, to at least one processor, in response to identification of the points of contact in the second partial region through the touch sensor, the data for identifying, as a touch input, at least some points of contact in the second partial region.

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Background/Summary

CROSS-REFERENCE TO RELATED APPLICATIONS [0001] This application is a continuation of International Application No. PCT/KR 2023/016109 designating the United States, filed on Oct. 18, 2023, in the Korean Intellectual Property Receiving Office and claiming priority to Korean Patent Application Nos. 10-2022-0148899, filed on Nov. 9, 2022, and 10-2022-0156593, filed on Nov. 21, 2022,in the Korean Intellectual Property Office, the disclosures of each of which are incorporated by reference herein in their entireties.

BACKGROUND
Field
[0002] The disclosure relates to a wearable device, a method, and a non-transitory computer-readable storage medium for identifying a touch input.
Description of Related Art
[0003] A wearable device may be a device capable of communicating with a user while being attached to at least a portion of a user's body. For example, the wearable device may include a display panel for displaying information for communication with the user. For example, the wearable device may identify a touch input received via the display panel to communicate with the user.
[0004] The above-described information may be provided as a related art for the purpose of helping to understand the present disclosure. No assertion or determination is raised as to whether any of the above-described information may be applied as a prior art related to the present disclosure.
SUMMARY
[0005] According to an example embodiment, a wearable device is provided. The wearable device may comprise: at least one sensor; touch circuitry including control circuitry and a touch sensor; a display panel including an area capable of receiving a touch input via the touch sensor; at least one processor, comprising processing circuitry, wherein the control circuitry may be configured to: obtain information indicating a posture of the wearable device via the at least one sensor; based on the information indicating the posture different from a reference posture, identify, from the area, a first partial area located along a periphery of the area and a second partial area surrounded by the first partial area; in response to identifying points of contact on the first partial area via the touch sensor, refrain from providing, to at least one processor, data for identifying at least a portion of the points of contact on the first partial area as a touch; and in response to identifying points of contact on the second partial area via the touch sensor, provide, to at least one processor, data for identifying at least a portion of the points of contact on the second partial area as a touch input.
[0006] According to an example embodiment, a method is provided. The method may be executed in a wearable device comprising at least one sensor, touch circuitry including control circuitry and a touch sensor, a display panel including an area capable of receiving a touch input via the touch sensor, and at least one processor, comprising processing circuitry. The method may comprise:

obtaining, by the control circuitry, information indicating a posture of the wearable device via the at least one sensor; based on the information indicating the posture different from a reference posture, identifying, by the control circuitry, from the area, a first partial area located along a periphery of the area and a second partial area surrounded by the first partial area; in response to identifying points of contact on the first partial area via the touch sensor, refraining from, by the control circuitry, providing, to at least one processor, data for identifying at least a portion of the points of contact on the first partial area as a touch input; and in response to identifying points of contact on the second partial area via the touch sensor, providing, by the control circuitry, to at least one processor, data for identifying at least a portion of the points of contact on the second partial area as a touch input.
[0007] According to an example embodiment, a non-transitory computer-readable storage device is provided. The non-transitory computer readable storage device may store one or more programs. The one or more programs may comprise instructions which, when executed by control circuitry in touch circuitry of a wearable device comprising at least one sensor, the touch circuitry including a touch sensor, a display panel including an area capable of receiving a touch input via the touch sensor, and at least one processor, comprising processing circuitry, cause the wearable device to: obtain information indicating a posture of the wearable device via the at least one sensor;
[0008] based on the information indicating the posture different from a reference posture, identify, from the area, a first partial area located along a periphery of the area and a second partial area surrounded by the first partial area; in response to identifying points of contact on the first partial area via the touch sensor, refrain from providing, to at least one processor, data for identifying at least a portion of the points of contact on the first partial area as a touch input; and in response to identifying points of contact on the second partial area via the touch sensor, provide, to at least one processor, data for identifying at least a portion of the points of contact on the second partial area as a touch input.

Description

BRIEF DESCRIPTION OF THE DRAWINGS
[0009] The above and other aspects, features and advantages of certain embodiments of the present disclosure will be more apparent from the following detailed description, taken in conjunction with the accompanying drawings, in which:
[0010] FIG. **1** illustrates an example of an unintended touch input according to various embodiments;
[0011] FIG. **2** is a block diagram illustrating an example configuration of an example wearable device according to various embodiments;
[0012] FIG. **3** is a flowchart illustrating an example method of identifying a touch input via partial areas adaptively identified based on a posture of a wearable device according to various embodiments;
[0013] FIG. **4** is a diagram illustrating an example of partial areas adaptively identified based on a posture of a wearable device according to various embodiments;
[0014] FIG. **5** is a flowchart illustrating an example method of identifying a touch input further based on whether a wearable device is worn according to various embodiments;
[0015] FIG. **6** is a signal flow diagram illustrating an example method of identifying a touch input further based on a state of an electronic device according to various embodiments;
[0016] FIG. **7** is a diagram illustrating an example of a state of an electronic device corresponding to a reference state according to various embodiments;
[0017] FIG. **8** is a signal flow diagram illustrating an example method of providing information from a processor to control circuitry based on a state of an electronic device according to various

embodiments;
[0018] FIG. **9** is a block diagram illustrating an example electronic device in a network environment according to various embodiments; and
[0019] FIG. **10** is a block diagram illustrating an example configuration of a display module according to various embodiments.
DETAILED DESCRIPTION
[0020] FIG. **1** is a diagram illustrating an example of an unintended touch input according to various embodiments.
[0021] Referring to FIG. **1**, a wearable device **100** may be worn by a user or attached to a part of a body of the user, such as in a state **101**, a state **102**, and a state **103**. For example, the wearable device **100** may include a display panel **110**. For example, the display panel **110** may include an area capable of receiving a touch input.
[0022] For example, the wearable device **100** worn by a user may identify or recognize a touch input, in response to an external object on the area. For example, the wearable device **100** may provide feedback and/or response, in response to identification or recognition of the touch input. For example, when the external object in contact with the area is an input means (e.g., the user's finger or stylus), providing the feedback or the response based on the external object may be performing an intended operation with respect to the user. As a non-limiting example, when the external object in contact with the area is not an input means, providing the feedback or the response based on the external object may be performing an unintended action for the user.
[0023] For example, as in the state **101**, the wearable device **100** worn by the user may identify a sleeve of a shirt in contact with an executable object **115-1** within the area. As a non-limiting example, based on identifying or recognizing the identification as a touch input to the executable object **115-1**, by the wearable device **100**, changing the executable object **115-1** into an executable object **115-2** and outputting acoustic signals through a speaker of the wearable device **100** or a speaker of an electronic device (not illustrated in FIG. **1**) connected to the wearable device **100** may be executing an unintended action for the user.
[0024] For example, as in the state **102**, the wearable device **100** worn by the user may identify a portion of a T-shirt in contact with the executable object **115-1** within the area. As a non-limiting example, based on identifying or recognizing the identification as a touch input to the executable object **115-1**, by the wearable device **100**, changing the executable object **115-1** into an executable object **115-2** and outputting acoustic signals through a speaker of the wearable device **100** or a speaker of an electronic device (not illustrated in FIG. **1**) connected to the wearable device **100** may be executing an unintended action for the user.
[0025] For example, as in state **103**, the wearable device **100** worn by the user may identify an inner surface of pants pocket in contact with the executable object **115-1** within the area. As a non-limiting example, based on identifying or recognizing the identification as a touch input to the executable object **115-1**, by the wearable device **100**, changing the executable object **115-1** into an executable object **115-2** and outputting acoustic signals through a speaker of the wearable device **100** or a speaker of an electronic device (not illustrated in FIG. **1**) connected to the wearable device **100** may be executing an unintended action for the user.
[0026] As illustrated below, the wearable device **100** may include components to reduce an execution of an unintended action. The components may be described in greater detail below with reference to FIG. **2**.
[0027] FIG. **2** is a block diagram illustrating an example configuration of an example wearable device according to various embodiments.
[0028] Referring to FIG. **2**, the wearable device **100** may include a processor (e.g., including processing circuitry) **210**, a display **220**, at least one sensor **240**, and communication circuitry **250**.
[0029] For example, the processor **210** may include at least a portion of a processor **920** of FIG. **9**.
[0030] For example, the display **220** may include a display panel **110** and touch circuitry **230**

including control circuitry **231** and a touch sensor **232**. For example, the display panel **110** may be used to display information, a screen, and/or an image. For example, the touch circuitry **230** may be used to identify or obtain data on points of contact on at least a portion of an area of the display panel **110**. In the disclosure, the points of contact may be caused by an external object located within a certain distance (or a predetermined distance) from the at least a portion of the area as well as an external object directly in contact with the at least a portion of the area. For example, the points of contact may be caused by an external object located on the at least a portion of the area or located above (or over) the at least a portion of the area. However, the disclosure is not limited thereto. For example, the control circuitry **231** may be used to control the touch sensor **232**. For example, the control circuitry **231** may be used to identify or obtain the data. For example, the control circuitry **231** may be used to provide the data to the processor **210**. For example, the touch sensor **232** may be arranged with respect to the display panel **110**. For example, the touch sensor **232** may be located within the area.

[0031] For example, the display **220** may include at least a portion of the display module **960** of FIGS. **9** and **10**. For example, the display panel **110** may include at least a portion of the display **210** of FIG. **10**. For example, the touch circuitry **230** may include at least a portion of the touch circuitry **1050** of FIG. **10**. For example, the control circuitry **231** may include at least a portion of the touch sensor integrated circuit (IC) **1053** of FIG. **10**. For example, the touch sensor **232** may include at least a portion of the touch sensor **1051** of FIG. **10**.

[0032] For example, the at least one sensor **240** may be used to identify a posture of the wearable device **100**. For example, the at least one sensor **240** may include an acceleration sensor and/or a gyro sensor. For example, the at least one sensor **240** may include at least a portion of the sensor module **976** of FIG. **9**.

[0033] For example, the communication circuitry **250** may be used for communication between the wearable device **100** and another electronic device (e.g., the electronic device **600** of FIG. **6**). For example, the communication circuitry **250** may include at least a portion of the communication module **990** of FIG. **9**.

[0034] For example, the control circuitry **231** and/or the processor **210** may execute operations to reduce unintended operations performed with respect to the user based on points of contact caused by an external object distinct from an input means. The operations may be illustrated below.

[0035] FIG. **3** is a flowchart illustrating an example method of identifying a touch input via partial areas adaptively identified based on a posture of a wearable device. This method may, for example, and without limitation, be executed by the control circuitry **231** of FIG. **2**.

[0036] Referring to FIG. **3**, in operation **301**, the control circuitry **231** may obtain information indicating a posture of the wearable device **100** via the at least one sensor **240**. For example, the control circuitry **231** may directly obtain the information via the at least one sensor **240**. For example, the control circuitry **231** may obtain the information from the at least one sensor **240** via the processor **210**. However, the disclosure is not limited thereto.

[0037] For example, the information may be obtained through the acceleration sensor in the at least one sensor **240** while the wearable device **100** is in a static state. For example, the information may be obtained through the acceleration sensor and the gyro sensor in the at least one sensor **240** while the wearable device **100** is moving. For example, the information may be obtained through an image sensor in the at least one sensor **240**. For example, the information obtained through the image sensor may be an image. For example, the image sensor may be disabled in response to obtaining the image. For example, the disabled image sensor may be enabled based on a predetermined period or a predetermined (e.g., specified) event. The enabled image sensor may be disabled again after obtaining the image again. However, the disclosure is not limited thereto.

[0038] As a non-limiting example, the information may indicate the posture by indicating an orientation or an inclination of the wearable device **100**. As a non-limiting example, the information may indicate a direction in which the display panel **110** faces. As a non-limiting

example, the information may indicate a change in the direction in which the display panel **110** faces.
[0039] In operation **303**, the control circuitry **231** may identify whether the posture of the wearable device **100** indicated by the obtained information corresponds to a reference posture.
[0040] For example, the reference posture may indicate a posture of the wearable device **100** used by a user. For example, the reference posture may indicate a posture of the wearable device **100** in which the display panel **110** faces the user's face (or eyes). For example, the reference posture may indicate a posture of the wearable device **100** in which an angle between the direction in which the display panel **110** faces and a reference direction (e.g., a direction of gravity) is within a predetermined range. However, the disclosure is not limited thereto.
[0041] For example, the control circuitry **231** may execute operation **305** based on the information indicating the posture of the wearable device **100** different from the reference posture. For example, the control circuitry **231** may execute operation **307** based on the information indicating the posture of the wearable device **100** corresponding to the reference posture.
[0042] For example, when the information is an image obtained through the image sensor, the processor **210** may identify whether a visual object corresponding to a face (or eye) of a user is included in the image, and provide, to the control circuitry **231**, a signal indicating that the visual object is included in the image or a signal indicating that the visual object is not included in the image. For example, the control circuitry **231** may identify that the posture corresponds to the reference posture based on the signal indicating that the visual object is included in the image, and identify that the posture is different from the reference posture based on the signal indicating that the visual object is not included in the image.
[0043] In operation **305**, the control circuitry **231** may identify, on a condition that the posture of the wearable device **100** indicated by the information is different from the reference posture, a first partial area and a second partial area, from the area of the display panel **110** receiving a touch input through the touch sensor **232**. The first partial area and the second partial area may be illustrated and described in greater detail below with reference to FIG. **4**.
[0044] FIG. **4** is a diagram illustrating an example of partial areas adaptively identified based on a posture of a wearable device according to various embodiments.
[0045] Referring to FIG. **4**, when the posture of the wearable device **100** is distinct from the reference posture, the control circuitry **231** may identify, from an area **400** of the display panel **110** capable of receiving a touch input, a first partial area **410** and a second partial area **420**. For example, the first partial area **410** may be located along a periphery **401** of the area **400**. For example, the second partial area **420** may be surrounded by the first partial area **410**. For example, the first partial area **410** may be located around the second partial area **420**.
[0046] Referring back to FIG. **3**, when the posture of the wearable device **100** is different from the reference posture, since the first partial area is located along a periphery of the area, unlike the second partial area surrounded by the first partial area, a probability that an unintended external object is contacted on the first partial area may be higher than a probability that an unintended external object is contacted on the second partial area. For example, since providing feedback or response based on points of contact on the first partial area may be executing an unintended action, unlike providing feedback or response based on points of contact on the second partial area, the control circuitry **231** may differently process points of contact on the first partial area and points of contact on the second partial area.
[0047] For example, in response to points of contact on the first partial area identified by the touch sensor **232**, the control circuitry **231** may refrain from, bypass, or skip providing, to the processor **210**, data for identifying at least a portion of the points of contact on the first partial area as a touch input. For example, the wearable device **100** may reduce providing feedback or response with respect to a touch input identified from the at least a portion of the points of contact on the first partial area, by refraining from, bypassing or skipping providing, to the processor **210**, data for

identifying the at least a portion of the points of contact on the first partial area as a touch input. For example, the wearable device **100** may reduce inconvenience caused by an execution of an operation that is not intended for the user. For example, the wearable device **100** may provide enhanced usability through processing of the points of contact on the first partial area.

[0048] For example, the control circuitry **231** may provide, in response to points of contact on the second partial area identified through the touch sensor **232**, to the processor **210**, data for identifying at least a portion of the points of contact on the second partial area as a touch input. For example, the data may be provided to the processor **210** to request to provide feedback or response for a touch input identified from the at least a portion of the points of contact on the second partial area. For example, the data may indicate a location of the at least a portion of the points of contact on the second partial area. For example, the data may indicate a distribution of the points of contact on the second partial area. For example, the data may indicate a change in capacitance identified through the touch sensor **232** in the at least a portion of the points of contact on the second partial area. However, the disclosure is not limited thereto.

[0049] For example, since the points of contact on the second partial area may be intended, unlike the points of contact on the first partial area, the control circuitry **231** may provide, to the processor **210**, the data. For example, in response to obtaining the data, the processor **210** may identify a response, feedback, or a function corresponding to the data and provide the response, the feedback, or the function.

[0050] For example, a partial area within the area, such as the second partial area, capable of receiving a touch input while the posture of the wearable device **100** is different from the reference posture, may be further divided. For example, when the posture of the wearable device **100** is different from the reference posture, the control circuitry **231** may further identify a fifth partial area from the area. The fifth partial area may be illustrated with reference to FIG. **4**.

[0051] Referring to FIG. **4**, when the posture of the wearable device **100** is distinct from the reference posture, the control circuitry **231** may identify, from the area **400**, a first partial area **410**, a second partial area **420**, and a fifth partial area **450**. For example, the first partial area **410** may be located along a periphery **401** of the area **400**. For example, the second partial area **420** may be surrounded by the first partial area **420**. For example, the fifth partial area **450** may be surrounded by the second partial area **420**. For example, the second partial area **420** may be located around the fifth partial area **450**.

[0052] Referring back to FIG. **3**, when the posture of the wearable device **100** is different from the reference posture, the control circuitry **231** may provide, to the processor **210**, data for identifying at least a portion of the points of contact on the second partial area as a touch input, unlike the points of contact on the first partial area. For example, when the posture of the wearable device **100** is different from the reference posture, the control circuitry **231** may provide, to the processor **210**, data for identifying at least a portion of the points of contact on the fifth partial area as a touch input, unlike the points of contact on the first partial area. For example, a touch sensitivity used to identify the at least a portion of the points of contact on the second partial area may be different from a touch sensitivity used to identify the at least a portion of the points of contact on the fifth partial area. For example, since the fifth partial area is surrounded by the second partial area, a probability that an unintended external object is contacted on the fifth partial area may be lower than a probability that an unintended external object is contacted on the second partial area. For example, the probability that an unintended external object is contacted on the fifth partial area is lower than the probability that an unintended external object is contacted on the second partial area, a touch sensitivity used to identify the at least a portion of the points of contact on the fifth partial area may be higher than a touch sensitivity used to identify the at least a portion of the points of contact on the second partial area. However, the disclosure is not limited thereto.

[0053] For example, based on the posture different from the reference posture, the control circuitry **231** may refrain from providing, to the processor **210**, data for identifying at least a portion of the points of contact on the second partial area as a touch input, and refrain from providing, to the processor **210**, data for identifying at least a portion of the points of contact on the fifth partial area as a touch input. For example, the control circuitry **231** may refrain from providing, to the processor **210**, at least a portion of points of contact on the entire area.

[0054] Although not illustrated in FIG. **3**, on a condition that the posture of the wearable device **100** is different from the reference posture, the control circuitry **231** may refrain from, bypass, or skip providing, to the processor **210**, data for identifying at least a portion of points of contact on at least a portion of the area located wider than a reference area as a touch input. For example, in response to identifying points of contact located on at least a portion of the first partial area and at least a portion of the second partial area through the touch circuitry **232**, the control circuitry **231** may identify that the points of contact is distributed wider than the reference area. For example, the control circuitry **231** may refrain from, bypass, or skip providing, to the processor **210**, data for identifying the at least a portion of the points of contact distributed more widely than the reference area as a touch input.

[0055] As a non-limiting example, in case that a first timing for identifying a first set of points of contact located on at least a portion of the first partial area is different from a second timing for identifying a second set of points of contact located on at least a portion of the second partial area, even when the first set of the points of contact and the second set of the points of contact are located wider than the reference surface area, the control circuitry **231** may provide, to the processor **210**, data for identifying at least a portion of the first set of the points of contact and at least a portion of the second set of the points of contact as a touch input. For example, on a condition that the first timing is faster than the second timing, the processor **210** may identify the data as a swipe input from a periphery area of the area to a center of the area. For example, on a condition that the first timing is slower than the second timing, the processor **210** may identify the data as a swipe input from a center area of the area to a periphery area of the area.

[0056] In operation **307**, on a condition that the posture of the wearable device **100** indicated by the obtained information corresponds to the reference posture, the control circuitry **231** may identify a third partial area and a fourth partial area from the area of the display panel **110**. The third partial area and the fourth partial area may be illustrated and described in greater detail below with reference to FIG. **4**.

[0057] Referring to FIG. **4**, when the posture of the wearable device **100** corresponds to the reference posture, the control circuitry **231** may identify the third partial area **430** and the fourth partial area **440** from the area **400** of the display panel **110** capable of receiving a touch input. For example, the third partial area **430** may be located along a periphery **401** of the area **400**. For example, the fourth partial area **440** may be surrounded by the third partial area **430**. For example, the third partial area **430** may be located around the fourth partial area **440**. For example, the third partial area **430** may be at least partially superimposed with the first partial area. For example, a width **431** of the third partial area **430** may be wider than a width **411** of the first partial area **410**. For example, unlike the first partial area **410** incapable of receiving a touch input, since the third partial area **430** is used to receive a touch input, the width **431** may be wider than the width **411**. However, the disclosure is not limited thereto. The width **431** may be narrower than or equal to the width **411**. For example, when the posture is different from the reference posture, the width **411** may be wider than or equal to the width **431** to reduce identifying of an unintended touch input.

[0058] Referring back to FIG. **3**, when the posture of the wearable device **100** corresponds to the reference posture, the control circuitry **231** may provide, to the processor **210**, data for identifying at least a portion of points of contact on the third partial area as a touch input. For example, when the posture of the wearable device **100** corresponds to the reference posture, the control circuitry **231** may provide, to the processor **210**, data for identifying at least a portion of points of contact on the fourth partial area as a touch input. A first touch sensitivity used to identify the at least a portion of the points of contact on the third partial area may be different from a second touch sensitivity used to identify the at least a portion of the points of contact on the fourth partial area. For example, when the third partial area is configured to receive a touch input that is swept or swiped along at least a portion of a periphery of the area (e.g., the periphery **401** of the area **400** of FIG. **4**), the first touch sensitivity may be higher than the second touch sensitivity. However, the disclosure is not limited thereto. For example, the first touch sensitivity may be lower than or equal to the second touch sensitivity. For example, the control circuitry **231** may identify, in response to identifying the points of contact on the third partial area via the touch sensor **232**, the at least a portion of the points of contact on the third partial area based on the first touch sensitivity, and provide, to the processor **210**, data for identifying the at least a portion of the points of contact on the third partial area identified based on the first touch sensitivity as a touch input. For example, the control circuitry **231** may identify, in response to identifying the points of contact on the fourth partial area via the touch sensor **232**, the at least a portion of the points of contact on the fourth partial area based on the second touch sensitivity, and provide, to the processor **210**, data for identifying the at least a portion of the points of contact on the fourth partial area identified based on the second touch sensitivity as a touch input. For example, in response to obtaining the data from the control circuitry **231**, the processor **210** may identify a response, feedback, or a function corresponding to the data and provide the response, the feedback, or the function.

[0059] For example, each of the first touch sensitivity used to identify at least a portion of points of contact on the third partial area and the second touch sensitivity used to identify at least a portion of points of contact on the fourth partial area may be at least partially different from a touch sensitivity used to identify at least a portion of points of contact on the second partial area and/or a touch sensitivity used to identify at least a portion of points of contact on the fifth partial area.

[0060] For example, the first touch sensitivity used to identify at least a portion of points of contact on the third partial area may be higher than a touch sensitivity used to identify at least a portion of points of contact on the second partial area. For example, the first touch sensitivity used to identify at least a portion of points of contact on the third partial area may be higher than or equal to a touch sensitivity used to identify at least a portion of points of contact on the fifth partial area. However, the disclosure is not limited thereto.

[0061] For example, the second touch sensitivity used to identify the at least a portion of the points of contact on the fourth partial area may be higher than or equal to a touch sensitivity used to identify the at least a portion of the points of contact on the second partial area. However, the disclosure is not limited thereto.

[0062] Although not illustrated in FIG. **3**, on a condition that the posture of the wearable device **100** corresponds to the reference posture, the control circuitry **231** may refrain from, bypass, or skip providing, to the processor **210**, data for identifying at least a portion of points of contact on at least a portion of the area disposed wider than the reference surface area as a touch input. For example, in response to identifying points of contact located on at least a portion of the third partial area and at least a portion of the fourth partial area via the touch circuitry **232**, the control circuitry **231** may identify that the points of contact are distributed more widely than the reference surface area. For example, the control circuitry **231** may refrain from, bypass, or skip providing, to the processor **210**, data for identifying the at least a portion of the points of contact distributed more widely than the reference surface area as a touch input. For example, the reference surface area used while the posture of the wearable device **100** corresponds to the reference posture may be different from a reference surface area used while the posture of the wearable device **100** is different from the reference posture. For example, the reference surface area used while the posture of the wearable device **100** corresponds to the reference posture may be wider than the reference surface area used while the posture of the wearable device **100** is different from the reference posture. For example, the reference surface area used while the posture of the wearable device **100** corresponds to the reference posture may be narrower than the reference surface area used while the posture of the wearable device **100** is different from the reference posture. However, the disclosure is not limited thereto. For example, the reference surface area used while the posture of the wearable device **100** corresponds to the reference posture may be the same as the reference surface area used while the posture of the wearable device **100** is different from the reference posture.

[0063] Operations in FIG. **3** executed by the control circuitry **231** may be executed by the processor **210** (refer to processor **920** of FIG. **9**).

[0064] For example, when the operations in FIG. **3** are executed by the processor **210**, in response to points of contact on a portion of the area identified via the touch sensor **232**, the control circuitry **231** may provide, to the processor **210**, data for identifying the at least a portion of the points of contact as a touch input.

[0065] For example, in response to identifying that the at least a portion of the points of contact is located on the first partial area identified from the area by the processor **210** based on the information indicating the posture different from the reference posture, the processor **210** may identify that the points of contact are not intended. For example, the processor **210** may refrain from providing feedback or a response based on the identification. For example, in response to identifying that the at least a portion of the points of contact is located on the second partial area identified from the area by the processor **210** based on the information indicating the posture different from the reference posture, the processor **210** may identify the points of contact as a touch input. For example, the processor **210** may provide feedback or a response based on the identification.

[0066] For example, in response to identifying that the at least a portion of the points of contact is located on the third partial area identified from the area by the processor **210** based on the information indicating the posture corresponding to the reference posture, the processor **210** may identify the points of contact as a touch input based on the first touch sensitivity. For example, the processor **210** may provide feedback or a response based on the identification. For example, in response to identifying that the at least a portion of the points of contact is located on the fourth partial area identified from the area by the processor **210** based on the information indicating the posture corresponding to the reference posture, the processor **210** may identify the points of contact as a touch input based on the second touch sensitivity. For example, the processor **210** may provide feedback or a response based on the identification.

[0067] As described above, the wearable device **100** may reduce execution of an unintended function by adaptively processing points of contact on at least a portion of an area of the display panel **110** capable of receiving a touch input, according to a posture of the wearable device **100**. For example, the wearable device **100** may provide enhanced usability through such adaptive processing. For example, the wearable device **100** may enhance efficiency of an operation of the wearable device **100** through such adaptive processing.

[0068] FIG. **5** is a flowchart illustrating an example method of identifying a touch input further based on whether a wearable device is worn according to various embodiments. This method may, for example, and without limitation, be executed by the control circuitry **231** of FIG. **2**.

[0069] Referring to FIG. **5**, in operation **501**, the control circuitry **231** may identify whether the wearable device **100** is worn.

[0070] For example, the control circuitry **231** may execute the identification based on information obtained through at least one sensor **240**. For example, the information may be obtained directly from the at least one sensor **240**. For example, the information may be obtained from the at least one sensor **240** through the processor **210**. However, the disclosure is not limited thereto.

[0071] For example, the information may indicate a direction in which the display panel **110** faces. For example, the information may indicate a change in a direction in which the display panel **110** faces. For example, the control circuitry **231** may identify that the wearable device **100** is worn, based on identifying that the change in the direction is maintained from the information. For example, the control circuitry **231** may identify that the wearable device **100** is not worn, based on identifying that the change in the direction is ceased from the information. However, the disclosure is not limited thereto.

[0072] For example, the control circuitry **231** may identify whether the wearable device **100** is worn, further based on points of contact located on at least a portion of the area of the display panel **110**. For example, the control circuitry **231** may identify that the wearable device **100** is worn, based on identifying that the points of contact on the at least a portion of the area are located wider than a reference surface area and that the change in the direction is maintained. For example, the control circuitry **231** may identify that the wearable device **100** is not worn, based on identifying that the points of contact are located narrower than the reference surface area and/or that the change in the direction is ceased. However, the disclosure is not limited thereto.

[0073] For example, the control circuitry **231** may execute operation **505** based on identifying that the wearable device **100** is worn, and execute operation **503** based on identifying that the wearable device **100** is not worn.

[0074] In operation **503**, the control circuitry **231** may identify whether a posture of the wearable device **100** worn by the user corresponds to a reference posture. For example, operation **503** may correspond to operation **303** of FIG. **3**. The control circuitry **231** may execute operation **505** based on the posture different from the reference posture, and execute operation **507** based on the posture corresponding to the reference posture.

[0075] In operation **505**, the control circuitry **231** may identify the first partial area and the second partial area from the area of the display panel **110**, on a condition that the wearable device **100** is not worn. For example, the control circuitry **231** may identify the first partial area and the second partial area from the area, on a condition that a posture of the wearable device **100** worn by the user is different from the reference posture. For example, identifying the first partial area and the second partial area may correspond to operation **305** of FIG. **3**.

[0076] In operation **507**, the control circuitry **231** may identify the third partial area and the fourth partial area from the area, on a condition that a posture of the wearable device **1100** worn by the user corresponds to the reference posture. For example, identifying the third partial area and the fourth partial area may correspond to operation **307** of FIG. **3**.

[0077] As described above, the wearable device **100** may reduce executing of an unintended function by adaptively processing points of contact on at least a portion of an area of the display panel **110** capable of receiving a touch input, further based on whether the wearable device **100** is worn. For example, the wearable device **100** may provide enhanced usability through such adaptive processing. For example, the wearable device **100** may enhance efficiency of an operation of the wearable device **100** through such adaptive processing.

[0078] FIG. **6** is a signal flow diagram illustrating an example method of identifying a touch input further based on a state of an electronic device according to various embodiments. This method may be executed by the processor **210** (refer, e.g., to processor **920** of FIG. **9**) and the control circuitry **231** of FIG. **2**.

[0079] Referring to FIG. **6**, in operation **601**, an electronic device **600** connected to the wearable device **100** may transmit information indicating a state of the electronic device **600** to the wearable device **100**. For example, the information may be transmitted to indicate whether the electronic device **600** is being used. For example, the information may indicate a posture of the electronic device **600** identified through at least one sensor of the electronic device **600**. For example, the information may indicate whether the electronic device **600** is within a state for normal power consumption or a state for lower power consumption. For example, the information may indicate a type of image or screen displayed through a display panel of the electronic device **600**. However, the disclosure is not limited thereto.

[0080] For example, the information may be transmitted from the electronic device **600** to the wearable device **100** based on a predetermined period while a connection between the wearable device **100** and the electronic device **600** is maintained. For example, the information may be transmitted from the electronic device **600** to the wearable device **100** in response to a change in a state of the electronic device **600**.

[0081] For example, the information may be transmitted in response to a request from the wearable device **100**. Although not illustrated in FIG. **6**, the processor **210** of the wearable device **100** may request, through the communication circuitry **250**, to transmit the information, in response to the information indicating the posture of the wearable device **100** different from the reference posture. The electronic device **600** may transmit the information to the wearable device **100**, in response to the request.

[0082] The processor **210** may receive the information from the electronic device **600** through the communication circuitry **250**. For example, the information may be received while the wearable device **100** is worn.

[0083] In operation **603**, the control circuitry **231** may identify the first partial area and the second partial area based on identifying that the posture of the wearable device **100** is different from the reference posture. For example, even when the control circuitry **231** identifies points of contact on the first partial area, the control circuitry **231** may refrain from providing, to the processor **210**, data for recognizing the at least a portion of the points of contact on the first partial area as a touch input. For example, the control circuitry **231** may execute operation **605** in response to identifying points of contact on the second partial area.

[0084] In operation **605**, the control circuitry **231** may provide, to the processor **210**, data for recognizing at least a portion of the points of contact on the second partial area as a touch input. For example, the processor **210** may obtain the data from the control circuitry **231**.

[0085] FIG. **6** illustrates an example in which operation **605** is executed after operation **601** is executed, but this is for convenience of description. Operation **601** may be executed after operation **605** is executed, or may be executed together with operation **605**.

[0086] In operation **607**, the processor **210** may identify whether a state of the electronic device **600**, indicated by the information received in operation **601**, corresponds to the reference state. For example, the reference state may indicate the use of the electronic device **600**. For example, the state of the electronic device **600** corresponding to the reference state may indicate that the electronic device **600** is being used. For example, the state of the electronic device **600** different from the reference state may indicate that the electronic device **600** is not being used. The state corresponding to the reference state and the state different from the reference state may be illustrated and described in greater detail below with reference to FIG. **7**.

[0087] FIG. **7** is a diagram illustrating an example of a state of an electronic device corresponding to a reference state and a state of the electronic device different from the reference state according to various embodiments.

[0088] Referring to FIG. **7**, the processor **210** may identify that the state of the electronic device **600** corresponds to the reference state, based on identifying a state in which a touch input is being received through a display panel of the electronic device **600**, such as in a state **700**, through the information. For example, the processor **210** may identify that the state of the electronic device **600** corresponds to the reference state, based on identifying a posture of the electronic device **600** toward a user's face (or eye) through the display panel of the electronic device **600** in an unlocked state, such as in a state **720**, through the information. For example, the processor **210** may identify that the state of the electronic device **600** is different from the reference state, based on identifying a state in which the electronic device **600** is located on an external object **745**, or the display panel of the electronic device **600** facing in a vertical direction, such as in a state **740**, through the information. For example, the processor **210** may identify that the state of the electronic device **600** is different from the reference state, based on identifying that a screen (e.g., an always on display (AoD) screen) provided while a processor of the electronic device **600** is at least temporarily in a sleep state is displayed through the display panel of the electronic device **600**, such as in a state **760**, through the information. For example, the screen may be displayed while the electronic device

600 is in a state for lower power consumption. For example, although not illustrated in FIG. **7**, the processor **210** may identify that the state of the electronic device **600** is different from the reference state, based on identifying that a black screen is displayed through the display panel of the electronic device **600**, through the information. However, the disclosure is not limited thereto.

[0089] Referring back to FIG. **6**, the processor **210** may execute operation **609** based on the state of the electronic device **600** corresponding to the reference state, and execute operation **611** based on the state of the electronic device **600** different from the reference state.

[0090] In operation **609**, the processor **210** may refrain from identifying a touch input based on the data obtained in operation **605**, on a condition that the state of the electronic device **600** corresponds to the reference state. For example, since points of contact on the second partial area identified through the touch sensor **232** while the electronic device **600** is being used by a user wearing the wearable device **100** may be points of contact caused contrary to the user's intention, the processor **210** may ignore the data. For example, providing feedback (or a response) based on points of contact on the first partial area and points of contact on the second partial area may be refrained in accordance with the state of the electronic device **600** corresponding to the reference state

[0091] In operation **611**, the processor **210** may identify a touch input based on the data obtained in operation **605**, on a condition that the state of the electronic device **600** is different from the reference state. For example, the processor **210** may identify the touch input based on a location of the at least a portion of the points of contact and/or a shape (or pattern) formed by the at least a portion of the points of contact.

[0092] In operation **613**, the processor **210** may provide feedback on the identified touch input. As a non-limiting example, the processor **210** may provide the feedback by changing at least a portion of a screen displayed on the display panel **110** of the wearable device **100**.

[0093] As described above, the wearable device **100** may reduce executing of an unintended function, by adaptively processing points of contact on at least a portion of an area of the display panel **110** capable of receiving a touch input, further based on a state of the electronic device **600** connected to the wearable device **100**. For example, the wearable device **100** may provide enhanced usability through such adaptive processing. For example, the wearable device **100** may enhance efficiency of an operation of the wearable device **100** through such adaptive processing.

[0094] FIG. **8** is a signal flow diagram illustrating an example method of providing information from a processor to control circuitry based on a state of an electronic device according to various embodiments. This method may be executed by the processor **210** (refer, e.g., to processor **920** of FIG. **9**) and the control circuitry **231** of FIG. **2**.

[0095] Referring to FIG. **8**, in operation **801**, the electronic device **600** connected to the wearable device **100** may transmit, to the wearable device **100**, information indicating a state of the electronic device **600**. For example, operation **801** may correspond to operation **601**. The processor **210** may receive the information from the electronic device **600** through the communication circuitry **250**. For example, the information may be received while the wearable device **100** is worn.

[0096] In operation **803**, the processor **210** may identify whether the state of the electronic device **600** indicated by the information received in operation **801** corresponds to the reference state. For example, an operation of identifying whether the state corresponds to the reference state may correspond to operation **607** of FIG. **6**. For example, the processor **210** may execute operation **805** based on the state different from the reference state, and execute operation **807** based on the state corresponding to the reference state.

[0097] In operation **805**, on a condition that the state corresponds to the reference state, the processor **210** may provide, to the control circuitry **231**, information indicating to refrain from providing, to the processor **210**, data for identifying at least a portion of points of contact on at least a portion of the area of the display panel **110** capable of receiving a touch input as a touch input.

[0098] For example, in response to obtaining the information from the processor **210**, the control circuitry **231** may refrain from providing, to the processor **210**, data for identifying at least a portion of the points of contact on the at least a portion of the area as touch input.
[0099] For example, when the posture of the wearable device **100** is different from the reference posture, the control circuitry **231** may refrain from providing, to the processor **210**, data for identifying at least a portion of points of contact on the second partial area as well as at least a portion of points of contact on the first partial area as a touch input. For example, a touch input on the first partial area and a touch input on the second partial area may be blocked or ignored based on the information.
[0100] For example, when the posture of the wearable device **100** corresponds to the reference posture, the control circuitry **231** may refrain from providing, to the processor **210**, data for identifying at least a portion of points of contact on the third partial area as well as at least a portion of points of contact on the fourth partial area as a touch input. For example, a touch input on the third partial area and a touch input on the fourth partial area may be blocked or ignored based on the information.
[0101] In operation **807**, the processor **210** may cause the control circuitry **231** to maintain identifying the first partial area and the second partial area, on a condition that the state is different from the reference state. For example, the processor **210** may control the control circuitry **231** to execute operations **301** to **307** or operations **501** to **507**.
[0102] As described above, the wearable device **100** may reduce executing of an unintended function, by adaptively processing points of contact on at least a portion of an area of the display panel **110** capable of receiving a touch input, further based on a state of the electronic device **600** connected to the wearable device **100**. For example, the wearable device **100** may provide enhanced usability through such adaptive processing. For example, the wearable device **100** may enhance efficiency of an operation of the wearable device **100** through such adaptive processing.
[0103] FIG. **9** is a block diagram illustrating an example electronic device **901** in a network environment **900** according to various embodiments. Referring to FIG. **9**, the electronic device **901** in the network environment **900** may communicate with an electronic device **902** via a first network **998** (e.g., a short-range wireless communication network), or at least one of an electronic device **904** or a server **908** via a second network **999** (e.g., a long-range wireless communication network). According to an embodiment, the electronic device **901** may communicate with the electronic device **904** via the server **908**. According to an embodiment, the electronic device **901** may include a processor **920**, memory **930**, an input module **950**, a sound output module **955**, a display module **960**, an audio module **970**, a sensor module **976**, an interface **977**, a connecting terminal **978**, a haptic module **979**, a camera module **980**, a power management module **988**, a battery **989**, a communication module **990**, a subscriber identification module (SIM) **996**, or an antenna module **997**. In various embodiments, at least one of the components (e.g., the connecting terminal **978**) may be omitted from the electronic device **901**, or one or more other components may be added in the electronic device **901**. In various embodiments, some of the components (e.g., the sensor module **976**, the camera module **980**, or the antenna module **997**) may be implemented as a single component (e.g., the display module **960**).
[0104] The processor **920** may execute, for example, software (e.g., a program **940**) to control at least one other component (e.g., a hardware or software component) of the electronic device **901** coupled with the processor **920**, and may perform various data processing or computation. According to an embodiment, as at least part of the data processing or computation, the processor **920** may store a command or data received from another component (e.g., the sensor module **976** or the communication module **990**) in volatile memory **932**, process the command or the data stored in the volatile memory **932**, and store resulting data in non-volatile memory **934**. According to an embodiment, the processor **920** may include a main processor **921** (e.g., a central processing unit (CPU) or an application processor (AP)), or an auxiliary processor **923** (e.g., a graphics

processing unit (GPU), a neural processing unit (NPU), an image signal processor (ISP), a sensor hub processor, or a communication processor (CP)) that is operable independently from, or in conjunction with, the main processor **921**. For example, when the electronic device **901** includes the main processor **921** and the auxiliary processor **923**, the auxiliary processor **923** may be adapted to consume less power than the main processor **921**, or to be specific to a specified function. The auxiliary processor **923** may be implemented as separate from, or as part of the main processor **921**. Thus, the processor **920** may include various processing circuitry and/or multiple processors. For example, as used herein, including the claims, the term "processor" may include various processing circuitry, including at least one processor, wherein one or more of at least one processor, individually and/or collectively in a distributed manner, may be configured to perform various functions described herein. As used herein, when "a processor", "at least one processor", and "one or more processors" are described as being configured to perform numerous functions, these terms cover situations, for example and without limitation, in which one processor performs some of recited functions and another processor(s) performs other of recited functions, and also situations in which a single processor may perform all recited functions. Additionally, the at least one processor may include a combination of processors performing various of the recited/disclosed functions, e.g., in a distributed manner. At least one processor may execute program instructions to achieve or perform various functions.

[0105] The auxiliary processor **923** may control at least some of functions or states related to at least one component (e.g., the display module **960**, the sensor module **976**, or the communication module **990**) among the components of the electronic device **901**, instead of the main processor **921** while the main processor **921** is in an inactive (e.g., sleep) state, or together with the main processor **921** while the main processor **921** is in an active state (e.g., executing an application). According to an embodiment, the auxiliary processor **923** (e.g., an image signal processor or a communication processor) may be implemented as part of another component (e.g., the camera module **980** or the communication module **990**) functionally related to the auxiliary processor **923**. According to an embodiment, the auxiliary processor **923** (e.g., the neural processing unit) may include a hardware structure specified for artificial intelligence model processing. An artificial intelligence model may be generated by machine learning. Such learning may be performed, e.g., by the electronic device **901** where the artificial intelligence is performed or via a separate server (e.g., the server **908**). Learning algorithms may include, but are not limited to, e.g., supervised learning, unsupervised learning, semi-supervised learning, or reinforcement learning. The artificial intelligence model may include a plurality of artificial neural network layers. The artificial neural network may be a deep neural network (DNN), a convolutional neural network (CNN), a recurrent neural network (RNN), a restricted boltzmann machine (RBM), a deep belief network (DBN), a bidirectional recurrent deep neural network (BRDNN), deep Q-network or a combination of two or more thereof but is not limited thereto. The artificial intelligence model may, additionally or alternatively, include a software structure other than the hardware structure.

[0106] The memory **930** may store various data used by at least one component (e.g., the processor **920** or the sensor module **976**) of the electronic device **901**. The various data may include, for example, software (e.g., the program **940**) and input data or output data for a command related thereto. The memory **930** may include the volatile memory **932** or the non-volatile memory **934**.

[0107] The program **940** may be stored in the memory **930** as software, and may include, for example, an operating system (OS) **942**, middleware **944**, or an application **946**.

[0108] The input module **950** may receive a command or data to be used by another component (e.g., the processor **920**) of the electronic device **901**, from the outside (e.g., a user) of the electronic device **901**. The input module **950** may include, for example, a microphone, a mouse, a keyboard, a key (e.g., a button), or a digital pen (e.g., a stylus pen).

[0109] The sound output module **955** may output sound signals to the outside of the electronic device **901**. The sound output module **955** may include, for example, a speaker or a receiver. The

speaker may be used for general purposes, such as playing multimedia or playing record. The receiver may be used for receiving incoming calls. According to an embodiment, the receiver may be implemented as separate from, or as part of the speaker.
[0110] The display module **960** may visually provide information to the outside (e.g., a user) of the electronic device **901**. The display module **960** may include, for example, a display, a hologram device, or a projector and control circuitry to control a corresponding one of the display, hologram device, and projector. According to an embodiment, the display module **960** may include a touch sensor adapted to detect a touch, or a pressure sensor adapted to measure the intensity of force incurred by the touch.
[0111] The audio module **970** may convert a sound into an electrical signal and vice versa. According to an embodiment, the audio module **970** may obtain the sound via the input module **950**, or output the sound via the sound output module **955** or a headphone of an external electronic device (e.g., an electronic device **902**) directly (e.g., wiredly) or wirelessly coupled with the electronic device **901**.
[0112] The sensor module **976** may detect an operational state (e.g., power or temperature) of the electronic device **901** or an environmental state (e.g., a state of a user) external to the electronic device **901**, and then generate an electrical signal or data value corresponding to the detected state. According to an embodiment, the sensor module **976** may include, for example, a gesture sensor, a gyro sensor, an atmospheric pressure sensor, a magnetic sensor, an acceleration sensor, a grip sensor, a proximity sensor, a color sensor, an infrared (IR) sensor, a biometric sensor, a temperature sensor, a humidity sensor, or an illuminance sensor.
[0113] The interface **977** may support one or more specified protocols to be used for the electronic device **901** to be coupled with the external electronic device (e.g., the electronic device **902**) directly (e.g., wiredly) or wirelessly. According to an embodiment, the interface **977** may include, for example, a high definition multimedia interface (HDMI), a universal serial bus (USB) interface, a secure digital (SD) card interface, or an audio interface.
[0114] A connecting terminal **978** may include a connector via which the electronic device **901** may be physically connected with the external electronic device (e.g., the electronic device **902**). According to an embodiment, the connecting terminal **978** may include, for example, an HDMI connector, a USB connector, a SD card connector, or an audio connector (e.g., a headphone connector).
[0115] The haptic module **979** may convert an electrical signal into a mechanical stimulus (e.g., a vibration or a movement) or electrical stimulus which may be recognized by a user via his tactile sensation or kinesthetic sensation. According to an embodiment, the haptic module **979** may include, for example, a motor, a piezoelectric element, or an electric stimulator.
[0116] The camera module **980** may capture a still image or moving images. According to an embodiment, the camera module **980** may include one or more lenses, image sensors, image signal processors, or flashes.
[0117] The power management module **988** may manage power supplied to the electronic device **901**. According to an embodiment, the power management module **988** may be implemented as at least part of, for example, a power management integrated circuit (PM IC).
[0118] The battery **989** may supply power to at least one component of the electronic device **901**. According to an embodiment, the battery **989** may include, for example, a primary cell which is not rechargeable, a secondary cell which is rechargeable, or a fuel cell.
[0119] The communication module **990** may support establishing a direct (e.g., wired) communication channel or a wireless communication channel between the electronic device **901** and the external electronic device (e.g., the electronic device **902**, the electronic device **904**, or the server **908**) and performing communication via the established communication channel. The communication module **990** may include one or more communication processors that are operable independently from the processor **920** (e.g., the application processor (AP)) and supports a direct

(e.g., wired) communication or a wireless communication. According to an embodiment, the communication module **990** may include a wireless communication module **992** (e.g., a cellular communication module, a short-range wireless communication module, or a global navigation satellite system (GNSS) communication module) or a wired communication module **994** (e.g., a local area network (LAN) communication module or a power line communication (PLC) module). A corresponding one of these communication modules may communicate with the external electronic device via the first network **998** (e.g., a short-range communication network, such as Bluetooth™, wireless-fidelity (Wi-Fi) direct, or infrared data association (IrDA)) or the second network **999** (e.g., a long-range communication network, such as a legacy cellular network, a 5G network, a next-generation communication network, the Internet, or a computer network (e.g., LAN or wide area network (WAN)). These various types of communication modules may be implemented as a single component (e.g., a single chip), or may be implemented as multi components (e.g., multi chips) separate from each other. The wireless communication module **992** may identify and authenticate the electronic device **901** in a communication network, such as the first network **998** or the second network **999**, using subscriber information (e.g., international mobile subscriber identity (IMSI)) stored in the subscriber identification module **996**.

[0120] The wireless communication module **992** may support a 5G network, after a 4G network, and next-generation communication technology, e.g., new radio (NR) access technology. The NR access technology may support enhanced mobile broadband (eMBB), massive machine type communications (mMTC), or ultra-reliable and low-latency communications (URLLC). The wireless communication module **992** may support a high-frequency band (e.g., the mmWave band) to achieve, e.g., a high data transmission rate. The wireless communication module **992** may support various technologies for securing performance on a high-frequency band, such as, e.g., beamforming, massive multiple-input and multiple-output (massive MIMO), full dimensional MIMO (FD-MIMO), array antenna, analog beam-forming, or large scale antenna. The wireless communication module **992** may support various requirements specified in the electronic device **901**, an external electronic device (e.g., the electronic device **904**), or a network system (e.g., the second network **999**). According to an embodiment, the wireless communication module **992** may support a peak data rate (e.g., 20 Gbps or more) for implementing eM BB, loss coverage (e.g., 964 dB or less) for implementing mMTC, or U-plane latency (e.g., 0.5 ms or less for each of downlink (DL) and uplink (UL), or a round trip of 9 ms or less) for implementing URLLC.

[0121] The antenna module **997** may transmit or receive a signal or power to or from the outside (e.g., the external electronic device) of the electronic device **901**. According to an embodiment, the antenna module **997** may include an antenna including a radiating element including a conductive material or a conductive pattern formed in or on a substrate (e.g., a printed circuit board (PCB)). According to an embodiment, the antenna module **997** may include a plurality of antennas (e.g., array antennas). In such a case, at least one antenna appropriate for a communication scheme used in the communication network, such as the first network **998** or the second network **999**, may be selected, for example, by the communication module **990** (e.g., the wireless communication module **992**) from the plurality of antennas. The signal or the power may then be transmitted or received between the communication module **990** and the external electronic device via the selected at least one antenna. According to an embodiment, another component (e.g., a radio frequency integrated circuit (RFIC)) other than the radiating element may be additionally formed as part of the antenna module **997**.

[0122] According to various embodiments, the antenna module **997** may form a mmWave antenna module. According to an embodiment, the mmWave antenna module may include a printed circuit board, an RFIC disposed on a first surface (e.g., the bottom surface) of the printed circuit board, or adjacent to the first surface and capable of supporting a designated high-frequency band (e.g., the mmWave band), and a plurality of antennas (e.g., array antennas) disposed on a second surface (e.g., the top or a side surface) of the printed circuit board, or adjacent to the second surface and capable of transmitting or receiving signals of the designated high-frequency band.

[0123] At least some of the above-described components may be coupled mutually and communicate signals (e.g., commands or data) therebetween via an inter-peripheral communication scheme (e.g., a bus, general purpose input and output (GPIO), serial peripheral interface (SPI), or mobile industry processor interface (MIPI)).

[0124] According to an embodiment, commands or data may be transmitted or received between the electronic device **901** and the external electronic device **904** via the server **908** coupled with the second network **999**. Each of the electronic devices **902** or **904** may be a device of a same type as, or a different type, from the electronic device **901**. According to an embodiment, all or some of operations to be executed at the electronic device **901** may be executed at one or more of the external electronic devices **902**, **904**, or **908**. For example, if the electronic device **901** should perform a function or a service automatically, or in response to a request from a user or another device, the electronic device **901**, instead of, or in addition to, executing the function or the service, may request the one or more external electronic devices to perform at least part of the function or the service. The one or more external electronic devices receiving the request may perform the at least part of the function or the service requested, or an additional function or an additional service related to the request, and transfer an outcome of the performing to the electronic device **901**. The electronic device **901** may provide the outcome, with or without further processing of the outcome, as at least part of a reply to the request. To that end, a cloud computing, distributed computing, mobile edge computing (MEC), or client-server computing technology may be used, for example. The electronic device **901** may provide ultra low-latency services using, e.g., distributed computing or mobile edge computing. In an embodiment, the external electronic device **904** may include an internet-of-things (IoT) device. The server **908** may be an intelligent server using machine learning and/or a neural network. According to an embodiment, the external electronic device **904** or the server **908** may be included in the second network **999**. The electronic device **901** may be applied to intelligent services (e.g., smart home, smart city, smart car, or healthcare) based on 5G communication technology or IoT-related technology.

[0125] FIG. **10** is a block diagram **1000** illustrating an example configuration of the display module **960** according to various embodiments. Referring to FIG. **10**, the display module **960** may include a display **1010** and a display driver integrated circuit (DDI) **1030** to control the display **1010**. The DDI **1030** may include an interface module (e.g., including circuitry) **1031**, memory **1033** (e.g., buffer memory), an image processing module (e.g., including circuitry and/or executable program instructions) **1035**, and/or a mapping module **1037**. The DDI **1030** may receive image information that contains image data or an image control signal corresponding to a command to control the image data from another component of the electronic device **901** via the interface module **1031**. For example, according to an embodiment, the image information may be received from the processor **920** (e.g., the main processor **921** (e.g., an application processor)) or the auxiliary processor **923** (e.g., a graphics processing unit) operated independently from the function of the main processor **921**. The DDI **1030** may communicate, for example, with touch circuitry **1050** or the sensor module **976** via the interface module **1031**. The DDI **1030** may also store at least part of the received image information in the memory **1033**, for example, on a frame by frame basis. The image processing module **1035** may perform pre-processing or post-processing (e.g., adjustment of resolution, brightness, or size) with respect to at least part of the image data. According to an embodiment, the pre-processing or post-processing may be performed, for example, based at least in part on one or more characteristics of the image data or one or more characteristics of the display **1010**. The mapping module **1037** may generate a voltage value or a current value corresponding to the image data pre-processed or post-processed by the image processing module **1035**. According to an embodiment, the generating of the voltage value or current value may be performed, for example, based at least in part on one or more attributes of the pixels (e.g., an array, such as an RGB stripe or a pentile structure, of the pixels, or the size of each subpixel). At least some pixels of the display **1010** may be driven, for example, based at least in part on the voltage value or the current value such that visual information (e.g., a text, an image, or an icon) corresponding to the image data may be displayed via the display **1010**.

[0126] According to an embodiment, the display module **960** may further include the touch circuitry **1050**. The touch circuitry **1050** may include a touch sensor **1051** and a touch sensor IC **1053** to control the touch sensor **1051**. The touch sensor IC **1053** may control the touch sensor **1051** to sense a touch input or a hovering input with respect to a certain position on the display **1010**. To achieve this, for example, the touch sensor **1051** may detect (e.g., measure) a change in a signal (e.g., a voltage, a quantity of light, a resistance, or a quantity of one or more electric charges) corresponding to the certain position on the display **1010**. The touch circuitry **1050** may provide input information (e.g., a position, an area, a pressure, or a time) indicative of the touch input or the hovering input detected via the touch sensor **1051** to the processor **920**. According to an embodiment, at least part (e.g., the touch sensor IC **1053**) of the touch circuitry **1050** may be formed as part of the display **1010** or the DDI **1030**, or as part of another component (e.g., the auxiliary processor **923**) disposed outside the display module **960**.

[0127] According to an embodiment, the display module **960** may further include at least one sensor (e.g., a fingerprint sensor, an iris sensor, a pressure sensor, or an illuminance sensor) of the sensor module **976** or a control circuit for the at least one sensor. In such a case, the at least one sensor or the control circuit for the at least one sensor may be embedded in one portion of a component (e.g., the display **1010**, the DDI **1030**, or the touch circuitry **1050**)) of the display module **960**. For example, when the sensor module **976** embedded in the display module **960** includes a biometric sensor (e.g., a fingerprint sensor), the biometric sensor may obtain biometric information (e.g., a fingerprint image) corresponding to a touch input received via a portion of the display **1010**. As another example, when the sensor module **976** embedded in the display module **960** includes a pressure sensor, the pressure sensor may obtain pressure information corresponding to a touch input received via a partial or whole area of the display **1010**. According to an embodiment, the touch sensor **1051** or the sensor module **976** may be disposed between pixels in a pixel layer of the display **1010**, or over or under the pixel layer.

[0128] As described above, a wearable device **100** according to an example embodiment may comprise at least one sensor **240**, touch circuitry **230** including control circuitry **231** and a touch sensor **232**, a display panel **110** including an area capable of receiving a touch input via the touch sensor **232**, and a processor **210**. According to an embodiment, the control circuitry **231** may be configured to obtain information indicating a posture of the wearable device **100** via the at least one sensor **240**. According to an embodiment, the control circuitry **231** may be configured to, based on the information indicating the posture different from a reference posture, identify, from the area, a first partial area located along a periphery of the area and a second partial area surrounded by the first partial area. According to an embodiment, the control circuitry **231** may be configured to, in response to identifying points of contact on the first partial area via the touch sensor **232**, refrain from providing, to the processor **210**, data for identifying at least a portion of the points of contact on the first partial area as a touch input. According to an embodiment, the control circuitry **231** may be configured to, in response to identifying points of contact on the second partial area via the touch sensor **232**, provide, to the processor **210**, data for identifying at least a portion of the points of contact on the second partial area as a touch input.

[0129] According to an example embodiment, the control circuitry **231** may be configured to, based on the information indicating the posture corresponding to the reference posture, identify, from the area, a third partial area at least partially superimposed on the first partial area and a fourth partial area surrounded by the third partial area. According to an embodiment, the control circuitry **231** may be configured to, in response to identifying points of contact on the third partial area via the touch sensor **232**, identify at least a portion of the points of contact on the third partial area based on a first touch sensitivity, and provide, to the processor **210**, data for identifying the at least a portion of the points of contact on the third partial area as a touch input. According to an embodiment, the control circuitry **231** may be configured to, in response to identifying points of contact on the fourth partial area via the touch sensor **232**, identify at least a portion of the points of contact on the fourth partial area based on a second touch sensitivity lower than the first touch sensitivity, and provide, to the processor **210**, data for identifying the at least a portion of the points of contact on the fourth partial area as a touch input. According to an embodiment, a width of the first partial area may be narrower than a width of the third partial area.

[0130] According to an example embodiment, the control circuitry **231** may be configured to, based on the information indicating the posture different from the reference posture, further identify, from the area, a third partial area surrounded by the second partial area. According to an embodiment, the control circuitry **231** may be configured to, in response to identifying points of contact on the third partial area via the touch sensor **232**, identify at least a portion of the points of contact on the third partial area based on a touch sensitivity higher than a touch sensitivity for the second partial area. According to an embodiment, the control circuitry **231** may be configured to, provide, to the processor **210**, data for identifying the at least a portion of the points of contact on the third partial area as a touch input.

[0131] According to an example embodiment, the wearable device **100** may comprise communication circuitry. According to an embodiment, the processor **210** may be configured to receive information indicating a state of an electronic device **600** connected to the wearable device **100**, via the communication circuitry, from the electronic device **600**. According to an embodiment, the processor **210** may be configured to, in response to the information indicating the state corresponding to a reference state, refrain from identifying a touch input based on the data provided from the control circuitry **231**, the reference state indicating use of the electronic device **600**. According to an embodiment, the processor **210** may be configured to, in response to the information indicating the state of the electronic device **600** different from the reference state, identify a touch input based on the data provided from the control circuitry **231**. According to an embodiment, the state corresponding to the reference state may comprise a display panel of the electronic device **600** in an unlock state pointing toward a face, and a touch input on the display panel of the electronic device **600** being identified. According to an embodiment, the state of the electronic device **600** different from the reference state may comprise the electronic device **600** being in a state for lower power consumption.

[0132] According to an example embodiment, the processor **210** may be configured to, in response to the information indicating the posture different from the reference posture, request, to the electronic device **600**, via the communication circuitry, to transmit the information indicating the state. According to an embodiment, the processor **210** may be configured to receive, via the communication circuitry, the information indicating the state transmitted from the electronic device **600** in response to the request.

[0133] According to an example embodiment, the processor **210** may be configured to, while identifying that the wearable device **100** is worn via the at least one sensor, receive, from the electronic device **600**, via the communication circuitry, the information.

[0134] According to an example embodiment, the wearable device **100** may comprise communication circuitry. According to an embodiment, the processor **210** may be configured to, in response to receiving, via the communication circuitry, information indicating a state of an electronic device **600** connected to the wearable device **100** that corresponds to a reference state, provide, to the control circuitry **231**, information indicating refraining from providing data for identifying at least a portion of points of contact on the second partial area as a touch input, the reference state indicating use of the electronic device **600**.

[0135] As described above, a method according to an example embodiment, may be executed in a wearable device **100** comprising at least one sensor, touch circuitry **230** including control circuitry **231** and a touch sensor **232**, a display panel **110** including an area capable of receiving a touch

input via the touch sensor **232**, and a processor **210**. According to an embodiment, the method may comprise obtaining, by the control circuitry **231**, information indicating a posture of the wearable device **100** via the at least one sensor. According to an embodiment, the method may comprise, based on the information indicating the posture different from a reference posture, identifying, by the control circuitry **231**, from the area, a first partial area located along a periphery of the area and a second partial area surrounded by the first partial area. According to an embodiment, the method may comprise, in response to identifying points of contact on the first partial area via the touch sensor **232**, refraining from, by the control circuitry **231**, providing, to the processor **210**, data for identifying at least a portion of the points of contact on the first partial area as a touch input. According to an embodiment, the method may comprise, in response to identifying points of contact on the second partial area via the touch sensor **232**, providing, by the control circuitry **231**, to the processor **210**, data for identifying at least a portion of the points of contact on the second partial area as a touch input.
[0136] According to an example embodiment, the method may comprise, based on the information indicating the posture corresponding to the reference posture, identifying, by the control circuitry **231**, from the area, a third partial area at least partially superimposed on the first partial area and a fourth partial area surrounded by the third partial area. According to an embodiment, the method may comprise, in response to identifying points of contact on the third partial area via the touch sensor **232**, identifying, by the control circuitry **231**, at least a portion of the points of contact on the third partial area based on a first touch sensitivity, and providing, by the control circuitry **231**, to the processor **210**, data for identifying the at least a portion of the points of contact on the third partial area as a touch input. According to an embodiment, the method may comprise, in response to identifying points of contact on the fourth partial area via the touch sensor **232**, identifying, by the control circuitry **231**, at least a portion of the points of contact on the fourth partial area based on a second touch sensitivity lower than the first touch sensitivity, and providing, by the control circuitry **231**, to the processor **210**, data for identifying the at least a portion of the points of contact on the fourth partial area as a touch input. According to an embodiment, a width of the first partial area may be narrower than a width of the third partial area.
[0137] According to an example embodiment, the method may comprise, based on the information indicating the posture different from the reference posture, further identifying, by the control circuitry **231**, from the area, a third partial area surrounded by the second partial area. According to an embodiment, the method may comprise, in response to identifying points of contact on the third partial area via the touch sensor **232**, identifying, by the control circuitry **231**, at least a portion of the points of contact on the third partial area based on a touch sensitivity higher than a touch sensitivity for the second partial area. According to an embodiment, the method may comprise providing, by the control circuitry **231**, to the processor **210**, data for identifying the at least a portion of the points of contact on the third partial area as a touch input.
[0138] According to an example embodiment, the method may comprise receiving, by the processor **210**, information indicating a state of an electronic device **600** connected to the wearable device **100**, via communication circuitry of the wearable device **100**, from the electronic device **600**. According to an embodiment, the method may comprise, in response to the information indicating the state corresponding to a reference state, refraining from, by the processor **210**, identifying a touch input based on the data provided from the control circuitry **231**, the reference state indicating use of the electronic device **600**.
[0139] According to an example embodiment, the method may comprise, in response to the information indicating the state different from the reference state, identifying, by the processor **210**, a touch input based on the data provided from the control circuitry **231**. According to an embodiment, the state corresponding to the reference state may comprise a display panel of the electronic device **600** in an unlock state pointing toward a face, and a touch input on the display panel of the electronic device **600** being identified. According to an embodiment, the state of the

electronic device **600** different from the reference state may comprise the electronic device **600** being in a state for lower power consumption.

[0140] According to an example embodiment, receiving the information from the electronic device **600** may comprise, in response to the information indicating the posture different from the reference posture, requesting, by the processor **210**, to the electronic device **600**, via the communication circuitry, to transmit the information indicating the state. According to an embodiment, receiving the information from the electronic device **600** may comprise receiving, by the processor **210**, via the communication circuitry, the information indicating the state transmitted from the electronic device **600** in response to the request.

[0141] The electronic device according to various embodiments may be one of various types of electronic devices. The electronic devices may include, for example, a portable communication device (e.g., a smartphone), a computer device, a portable multimedia device, a portable medical device, a camera, a wearable device, a home appliance, or the like. According to an embodiment of the disclosure, the electronic devices are not limited to those described above.

[0142] It should be appreciated that various embodiments of the present disclosure and the terms used therein are not intended to limit the technological features set forth herein to particular embodiments and include various changes, equivalents, or replacements for a corresponding embodiment. With regard to the description of the drawings, similar reference numerals may be used to refer to similar or related elements. It is to be understood that a singular form of a noun corresponding to an item may include one or more of the things unless the relevant context clearly indicates otherwise. As used herein, each of such phrases as “A or B,” “at least one of A and B,” “at least one of A or B,” “A, B, or C,” “at least one of A, B, and C,” and “at least one of A, B, or C,” may include any one of or all possible combinations of the items enumerated together in a corresponding one of the phrases. As used herein, such terms as “1st” and “2nd,” or “first” and “second” may be used to simply distinguish a corresponding component from another, and does not limit the components in other aspect (e.g., importance or order). It is to be understood that if an element (e.g., a first element) is referred to, with or without the term “operatively” or “communicatively”, as “coupled with,” or “connected with” another element (e.g., a second element), the element may be coupled with the other element directly (e.g., wiredly), wirelessly, or via a third element.

[0143] As used in connection with various embodiments of the disclosure, the term “module” may include a unit implemented in hardware, software, or firmware, or any combination thereof, and may interchangeably be used with other terms, for example, “logic,” “logic block,” “part,” or “circuitry”. A module may be a single integral component, or a minimum unit or part thereof, adapted to perform one or more functions. For example, according to an embodiment, the module may be implemented in a form of an application-specific integrated circuit (ASIC).

[0144] Various embodiments as set forth herein may be implemented as software (e.g., the program **940**) including one or more instructions that are stored in a storage medium (e.g., internal memory **936** or external memory **938**) that is readable by a machine (e.g., the electronic device **901**). For example, a processor (e.g., the processor **920**) of the machine (e.g., the electronic device **901**) may invoke at least one of the one or more instructions stored in the storage medium, and execute it, with or without using one or more other components under the control of the processor. This allows the machine to be operated to perform at least one function according to the at least one instruction invoked. The one or more instructions may include a code generated by a compiler or a code executable by an interpreter. The machine-readable storage medium may be provided in the form of a non-transitory storage medium. Wherein, the “non-transitory” storage medium is a tangible device, and may not include a signal (e.g., an electromagnetic wave), but this term does not differentiate between a case in which data is semi-permanently stored in the storage medium and a case in which the data is temporarily stored in the storage medium.

[0145] According to an embodiment, a method according to various embodiments of the disclosure

may be included and provided in a computer program product. The computer program product may be traded as a product between a seller and a buyer. The computer program product may be distributed in the form of a machine-readable storage medium (e.g., compact disc read only memory (CD-ROM)), or be distributed (e.g., downloaded or uploaded) online via an application store (e.g., PlayStore™), or between two user devices (e.g., smart phones) directly. If distributed online, at least part of the computer program product may be temporarily generated or at least temporarily stored in the machine-readable storage medium, such as memory of the manufacturer's server, a server of the application store, or a relay server.
[0146] According to various embodiments, each component (e.g., a module or a program) of the above-described components may include a single entity or multiple entities, and some of the multiple entities may be separately disposed in different components. According to various embodiments, one or more of the above-described components may be omitted, or one or more other components may be added. Alternatively or additionally, a plurality of components (e.g., modules or programs) may be integrated into a single component. In such a case, according to various embodiments, the integrated component may still perform one or more functions of each of the plurality of components in the same or similar manner as they are performed by a corresponding one of the plurality of components before the integration. According to various embodiments, operations performed by the module, the program, or another component may be carried out sequentially, in parallel, repeatedly, or heuristically, or one or more of the operations may be executed in a different order or omitted, or one or more other operations may be added.
[0147] While the disclosure has been illustrated and described with reference to various example embodiments, it will be understood that the various example embodiments are intended to be illustrative, not limiting. It will be further understood, by those skilled in the art, that various modifications, alternatives and/or variations of the various example embodiments may be made without departing from the true spirit and full scope of the disclosure, including the appended claims and their equivalents. It will also be understood that any of the embodiment(s) described herein may be used in conjunction with any other embodiment(s) described herein.

Claims

1. A wearable device comprising: at least one sensor; touch circuitry including control circuitry and a touch sensor; a display panel including an area capable of receiving a touch input via the touch sensor; and at least one processor comprising processing circuitry, wherein the control circuitry is configured to: obtain information indicating a posture of the wearable device via the at least one sensor; based on information indicating that the posture is different from a reference posture, identify, from the area, a first partial area located along a periphery of the area and a second partial area surrounded by the first partial area; in response to identifying points of contact on the first partial area via the touch sensor, refrain from providing, to the at least one processor, data for identifying at least a portion of the points of contact on the first partial area as a touch input; and in response to identifying points of contact on the second partial area via the touch sensor, provide, to the at least one processor, data for identifying at least a portion of the points of contact on the second partial area as a touch input.
2. The wearable device of claim 1, wherein the control circuitry is configured to: based on the information indicating the posture corresponding to the reference posture, identify, from the area, a third partial area at least partially superimposed on the first partial area and a fourth partial area surrounded by the third partial area; in response to identifying points of contact on the third partial area via the touch sensor: identify at least a portion of the points of contact on the third partial area based on a first touch sensitivity, and provide, to the at least one processor, data for identifying the at least a portion of the points of contact on the third partial area as a touch input; and in response to identifying points of contact on the fourth partial area via the touch sensor: identify at least a

portion of the points of contact on the fourth partial area based on a second touch sensitivity lower than the first touch sensitivity, and provide, to the at least one processor, data for identifying the at least a portion of the points of contact on the fourth partial area as a touch input.

3. The wearable device of claim 2, wherein a width of the first partial area is narrower than a width of the third partial area.

4. The wearable device of claim 1, wherein the control circuitry is configured to: based on the information indicating that the posture is different from the reference posture, further identify, from the area, a third partial area surrounded by the second partial area; in response to identifying points of contact on the third partial area via the touch sensor, identify at least a portion of the points of contact on the third partial area based on a touch sensitivity higher than a touch sensitivity for the second partial area; and provide, to the at least one processor, data for identifying the at least a portion of the points of contact on the third partial area as a touch input.

5. The wearable device of claim 1, further comprising: communication circuitry; and memory comprising one or more storage media storing instructions, wherein the instructions, when executed by the at least one processor, cause the wearable device to: receive information indicating a state of an electronic device connected to the wearable device, via the communication circuitry, from the electronic device; and in response to the information indicating the state of the electronic device corresponding to a reference state, refrain from identifying a touch input based on the data provided from the control circuitry, the reference state indicating use of the electronic device.

6. The wearable device of claim 5, wherein the instructions, when executed by the at least one processor, cause the wearable device to: in response to the information indicating that the state of the electronic device is different from the reference state, identify a touch input based on the data provided from the control circuitry.

7. The wearable device of claim 6, wherein the state of the electronic device corresponding to the reference state comprises: a display panel of the electronic device in an unlock state pointing toward a face, and a touch input on the display panel of the electronic device being identified.

8. The wearable device of claim 7, wherein the state of the electronic device different from the reference state comprises the electronic device being in a state for lower power consumption.

9. The wearable device of claim 5, wherein the instructions, when executed by the at least one processor, cause the wearable device to: in response to the information indicating that the posture is different from the reference posture, request, to the electronic device, via the communication circuitry, to transmit the information indicating the state of the electronic device; and receive, via the communication circuitry, the information indicating the state of the electronic device transmitted from the electronic device in response to the request.

10. The wearable device of claim 5, wherein the instructions, when executed by the at least one processor, cause the wearable device to: while identifying that the wearable device is worn via the at least one sensor, receive, from the electronic device, via the communication circuitry, the information.

11. The wearable device of claim 1, further comprising: communication circuitry; and memory comprising one or more storage media storing instructions, wherein the instructions, when executed by the at least one processor, cause the wearable device to: in response to receiving, via the communication circuitry, information indicating a state of an electronic device connected to the wearable device corresponding to a reference state, provide, to the control circuitry, information indicating refraining from providing data for identifying at least a portion of points of contact on the second partial area as a touch input, the reference state indicating use of the electronic device.

12. A method executed in a wearable device comprising at least one sensor, touch circuitry including control circuitry and a touch sensor, a display panel including an area capable of receiving a touch input via the touch sensor, and at least one processor, the method comprising: obtaining, by the control circuitry, information indicating a posture of the wearable device via the at least one sensor; based on the information indicating that the posture is different from a reference posture, identifying, by the control circuitry, from the area, a first partial area located along a periphery of the area and a second partial area surrounded by the first partial area; in response to identifying points of contact on the first partial area via the touch sensor, refraining from, by the control circuitry, providing, to the at least one processor, data for identifying at least a portion of the points of contact on the first partial area as a touch input; and in response to identifying points of contact on the second partial area via the touch sensor, providing, by the control circuitry, to the at least one processor, data for identifying at least a portion of the points of contact on the second partial area as a touch input.

13. The method of claim 12, further comprising: based on the information indicating the posture corresponding to the reference posture, identifying, by the control circuitry, from the area, a third partial area at least partially superimposed on the first partial area and a fourth partial area surrounded by the third partial area; in response to identifying points of contact on the third partial area via the touch sensor: identifying, by the control circuitry, at least a portion of the points of contact on the third partial area based on a first touch sensitivity, and providing, by the control circuitry, to the at least one processor, data for identifying the at least a portion of the points of contact on the third partial area as a touch input; and in response to identifying points of contact on the fourth partial area via the touch sensor: identifying, by the control circuitry, at least a portion of the points of contact on the fourth partial area based on a second touch sensitivity lower than the first touch sensitivity, and providing, by the control circuitry, to the at least one processor, data for identifying the at least a portion of the points of contact on the fourth partial area as a touch input.

14. The method of claim 13, wherein a width of the first partial area is narrower than a width of the third partial area.

15. The method of claim 12, further comprising: based on the information indicating that the posture is different from the reference posture, further identifying, by the control circuitry, from the area, a third partial area surrounded by the second partial area; in response to identifying points of contact on the third partial area via the touch sensor, identifying, by the control circuitry, at least a portion of the points of contact on the third partial area based on a touch sensitivity higher than a touch sensitivity for the second partial area; and providing, by the control circuitry, to the at least one processor, data for identifying the at least a portion of the points of contact on the third partial area as a touch input.

16. The method of claim 12, further comprising: receiving, by the at least one processor, information indicating a state of an electronic device connected to the wearable device, via communication circuitry of the wearable device, from the electronic device; and in response to the information indicating the state corresponding to a reference state, refraining from, by the at least one processor, identifying a touch input based on the data provided from the control circuitry, the reference state indicating use of the electronic device.

17. The method of claim 16, further comprising: in response to the information indicating the state different from the reference state, identifying, by the at least one processor, a touch input based on the data provided from the control circuitry.

18. The method of claim 17, wherein the state corresponding to the reference state comprises a display panel of the electronic device in an unlock state pointing toward a face, and a touch input on the display panel of the electronic device being identified.

19. The method of claim 18, wherein the state of the electronic device different from the reference state comprises the electronic device being in a state for lower power consumption.

20. The method of claim 16, wherein receiving the information from the electronic device comprises: in response to the information indicating the posture different from the reference posture, requesting, by the at least one processor, to the electronic device, via the communication circuitry, to transmit the information indicating the state; and receiving, by the at least one processor, via the communication circuitry, the information indicating the state transmitted from the electronic device in response to the request.