

CLAIMS

~~What is claimed is:~~

1. A method for distinguishing between sources of simultaneous touch events on a touch sensitive device, the touch sensitive device comprising a plurality of row conductors and a plurality of column conductors, the path of each of the row conductors crossing the path of each of the column conductors, the method comprising:

simultaneously transmitting each of a plurality of orthogonal row signals on a respective one of at least some of the plurality of row conductors;

detecting an amount of each of the plurality of orthogonal row signals present on each of the plurality of column conductors;

identifying the touch events on the touch sensitive device using the detected amount of each of the plurality of orthogonal row signals; and

associating each of the plurality of simultaneous touch events with a discrete source based on the detected amount of each of the plurality of orthogonal row signals;

wherein the step of identifying touch events comprises detecting coupling between a row or column being touched by a first one of a user's digits and a row or column being touched by a second one of the user's digits.

2. A method for distinguishing between sources of simultaneous touch events on a touch sensitive device, the touch sensitive device comprising a plurality of row conductors and a plurality of column conductors, the path of each of the row conductors crossing the path of each of the column conductors, the method comprising:

simultaneously transmitting each of a plurality of orthogonal row signals on a respective one of at least some of the plurality of row conductors;

detecting an amount of each of the plurality of orthogonal row signals present on each of the plurality of column conductors;

identifying the touch events on the touch sensitive device using the detected amount of each of the plurality of orthogonal row signals; and

associating each of the plurality of simultaneous touch events with a discrete source based on the detected amount of each of the plurality of orthogonal row signals;

wherein the step of identifying touch events comprises detecting coupling between

rows and columns in proximity to a touch event caused by one part of a user's body and between rows and columns in proximity to a touch event caused by another part of a user's body.

3. The method of claim 2, wherein the one part of a user's body is a digit and the another part of the user's body comprises the user's palm.

~~24.~~ The method of either claim 1 or 2, wherein the step of associating each of the plurality of simultaneous touch events with a discrete source comprises using the detected amount of each of the plurality of orthogonal row signals to associate the simultaneous touch events as coming from: separate digits of a hand, digits of separate hands of a same user, or digits of hands of different users.

~~35.~~ The method of either claim 1 or 2, further comprising:
simultaneously transmitting each of a plurality of orthogonal column signals on a respective one of at least some of the column conductors; and,
detecting an amount of each of the plurality of orthogonal column signals present on each of the plurality of row conductors.

~~46.~~ The method of claim ~~35~~, wherein the step of associating each of the plurality of simultaneous touch events with a discrete source further comprises using the detected amount of each of the plurality of orthogonal column signals to identify touch events on the touch sensitive device as coming from: digits of a same hand, digits of a separate hand of a same user, or digits of hands of different users.

~~57.~~ The method of either claim 1 or 2, wherein the step of identifying touch events is performed by a signal processor.

~~6. The method of claim 1, wherein the step of identifying touch events comprises detecting coupling between a row or column being touched by a first one of a user's digits and a row or column being touched by a second one of the user's digits.~~

~~7. The method of claim 1, wherein the step of identifying touch events comprises detecting coupling between rows and columns in proximity to a touch event caused by one part of a user's body and between rows and columns in proximity to a touch event caused by another part of a user's body.~~

~~8. The method of claim 7, wherein the one part of a user's body is a digit and the another part of the user's body comprises the user's palm.~~

~~98.~~ The method of either claim 1 or 2, wherein the step of detecting comprises detecting a change in the amount of each of the plurality of orthogonal row signals present on each of the plurality of column conductors resulting from the occurrence of simultaneous touch events.

~~109.~~ The method of claim ~~98~~, wherein at least one of the simultaneous touch events comprises a touch event due to the proximity of a part of a user's body with the plurality of row conductors and the plurality of column conductors.

~~110.~~ The method of claim ~~109~~, wherein at least one of the simultaneous touch events comprises a touch event due to the proximity of another part of a user's body with the plurality of row conductors and the plurality of column conductors.

~~121.~~ The method of either claim 1 or 2, wherein the step of associating each of the plurality of simultaneous touch events with a discrete source comprises using the detected amount of each of the plurality of orthogonal row signals to associate the at least one of the simultaneous touch events with a part of a user's body and at least one other of the simultaneous touch events with an object.

~~131.~~ The method of claim ~~121~~, wherein the object is a stylus.

~~141.~~ The method of either claim 1 or 2, wherein the touch events comprise an action by a user that occurs in proximity to the touch sensitive device.

~~15~~14. The method of claim ~~3~~5, wherein the plurality of orthogonal row signals is transmitted at the same time as the plurality of orthogonal column signals.

~~16~~15. The method of claim ~~3~~5, wherein the plurality of orthogonal row signals is not transmitted at the same time as the plurality of orthogonal column signals.

~~17. A method for distinguishing between sources of simultaneous touch events on or near a touch sensitive device, the touch sensitive device comprising a plurality of row conductors and a plurality of column conductors, the path of each of the row conductors crossing the path of each of the column conductors, the method comprising:~~

~~transmitting a row signal on each of a plurality of row conductors;~~

~~detecting an amount of transmitted row signal associated with each of the plurality of row conductors present on each of the plurality of column conductors;~~

~~using the detected amount of transmitted row signal associated with each of the plurality of row conductors to identify a plurality of simultaneous touch events on the touch sensitive device; and~~

~~using the detected amount of transmitted row signal associated with each of the plurality of row conductors to associate each of the plurality of simultaneous touch events as coming from a discrete source.~~

~~18. The method of claim 17, wherein the discrete sources of simultaneous touch events comprise: at least one touch event from a first user and at least one touch event from a second user.~~

~~19. The method of claim 17, wherein the discrete sources of simultaneous touch events comprise: two fingers from one hand.~~

~~20. The method of claim 17, wherein the discrete sources of simultaneous touch events comprise: a finger from one hand and a finger from another hand of a single user.~~

~~21. The method of claim 17, wherein the discrete sources of simultaneous touch events comprise: a finger from one hand of a first user and a finger from one hand of a second user.~~

~~22. The method of claim 17, wherein the discrete sources of simultaneous touch events comprise: at least one finger from one hand of a first user and at least one finger from one hand of a second user.~~

~~23. The method of claim 17, wherein the discrete sources of simultaneous touch events comprise: at least one finger from each of both hands of a first user and at least one finger from one hand of a second user.~~

~~24. The method claim 1, wherein the step of associating each of the plurality of simultaneous touch events with a discrete source comprises using the detected amount of each of the plurality of orthogonal row signals to associate the simultaneous touch events as coming from: a portion of an object linked to a plurality of touch areas, either through a plurality of capacitive touch points on a single object to aid in determining its position and orientation or through a stylus held by a user who is also touching another area of the display simultaneously with a part of his/her body.~~

~~25. The method of claim 4, wherein the step of associating each of the plurality of simultaneous touch events with a discrete source further comprises using the detected amount of each of the plurality of orthogonal column signals to identify touch events on the touch sensitive device as coming from: a portion of an object linked to a plurality of touch areas, either through a plurality of capacitive touch points on a single object to help determine its position and orientation or through a stylus held by a user who is also touching another area of the display simultaneously with a part of his/her body.~~

~~26. The method of claim 12, wherein at least one other of the simultaneous touch events is an event with an object and the step of associating each of the plurality of simultaneous touch~~

events with a discrete source is used to detect where a user's palm is so that the palm touch event is not registered as a false touch.

27. The method of claim 17, wherein the step of associating each of the plurality of simultaneous touch events with a discrete source comprises using the detected amount of each of the plurality of row signals to associate the at least one of the simultaneous touch events with a part of a user's body and at least one other of the simultaneous touch events with an object.

28. The method of claim 27, where at least one other of the simultaneous touch events is an event with an object and wherein the step of associating each of the plurality of simultaneous touch events with a discrete source is used for the purpose of detecting where a user's palm is so that the palm touch event is not registered as a false touch.