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(54) Title: SYSTEMS AND METHODS FOR CONFIGURING THE DISPLAY RESOLUTION OF AN ELECTRONIC DEVICE BASED ON DISTANCE

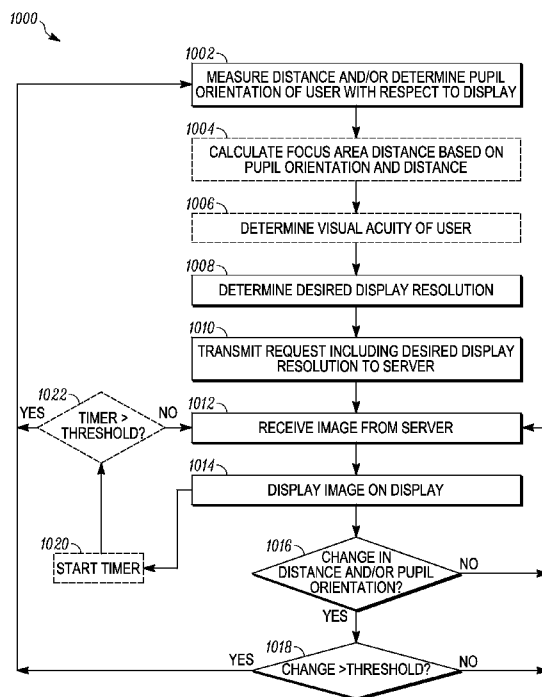


FIG. 10

(57) Abstract: Systems and methods dynamically configure a display (104) of an electronic device (102) to a desired display resolution without noticeable impact on the user viewing experience. According to certain aspects, the distance between a user (100) and the display is measured (1002), and the desired display resolution is determined (1008) based on the distance. A request indicating the desired display resolution is transmitted (1010) to a server that supplies images, such as pictures or videos. The image is received (1012) from the server and displayed (1014) on the display. If changes in the distance are detected (1016) above a certain threshold (1018), the distance is re-measured and the desired display resolution is re-determined. A focus area distance and/or a pupil orientation of the user may also influence the desired display resolution. Bandwidth, processing, and power savings may result through the use of these systems and methods.

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AMENDED CLAIMS

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1. A method of configuring a display of an electronic device, wherein the display is capable of supporting a plurality of display resolutions, the method comprising:
- 5 detecting a change in a distance between the display and a user of the electronic device, using a first distance measurement component;
- measuring the distance between the display and the user, using a second distance measurement component, if the change in the distance exceeds a predetermined threshold;
- 10 determining a desired display resolution of the display based on the distance, using a processor, wherein the desired display resolution is one of the plurality of display resolutions; and
- transmitting a request indicating the desired display resolution from the processor to a server external to the electronic device, wherein the server is capable of
- 15 supplying an image.
2. The method of claim 1, further comprising:
- detecting the change in the distance, using the first distance measurement component;
- 20 wherein determining the desired display resolution comprises:
- determining the desired display resolution of the display based on the distance, using the processor, if the change in the distance exceeds a predetermined distance threshold.

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3. The method of claim 1, further comprising:

determining a pupil orientation of the user with respect to the display, the pupil orientation corresponding to a focus area on the display of a pupil of the user;
and

5 calculating a focus area distance between the display and the pupil of the user based on the distance and the pupil orientation, using the processor;

wherein determining the desired display resolution comprises:

determining the desired display resolution of the display based on the focus area distance, using the processor.

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4. The method of claim 3, further comprising:

detecting a change in one or more of: the distance or the pupil orientation;

wherein determining the desired display resolution comprises:

15 determining the desired display resolution of the display based on one or more of the distance or the focus area distance, using the processor, if the change in the distance exceeds a predetermined distance threshold, or if the change in the focus area distance exceeds a predetermined focus area distance threshold.

20 5. The method of claim 1, further comprising:

determining a visual acuity of the user;

wherein determining the desired display resolution comprises:

determining the desired display resolution of the display based on one or more of the distance or the visual acuity, using the processor.

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REPLACEMENT SHEET

6. The method of claim 1, wherein transmitting the request comprises:
transmitting the request including an increment or a decrement to one of the plurality of display resolutions, from the processor to the server, wherein the increment or the decrement is based on the desired display resolution.

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7. The method of claim 1, wherein measuring the distance between the display and the user comprises:
measuring the distance between the display and the user on a periodic basis.

10 8. The method of claim 1, further comprising:
receiving the image at the processor at the desired display resolution as part of a video from the server; and
displaying the image on the display, using the processor, when a scene changes in the video.

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9. The method of claim 1, further comprising:
receiving from the server the image at a different display resolution at the processor, wherein the different display resolution is based on the request; and
displaying the image on the display, using the processor.

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10. An electronic device, comprising:
a display capable of supporting a plurality of display resolutions;
a first distance measurement component for measuring a distance between the display and a user of the electronic device;

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a second distance measurement component for measuring the distance
between the display and the user;

a transceiver; and

a processor configured to interface with the display, the distance measurement
5 component, and the transceiver and perform operations comprising:

detecting a change in the distance between the display and the user
using the first distance measurement component;

receiving the distance from the second distance measurement
component, if the change in the distance exceeds a predetermined threshold;

10 determining a desired display resolution of the display based on the
distance, wherein the desired display resolution is one of the plurality of
display resolutions; and

transmitting a request indicating the desired display resolution, using
the transceiver, to a server external to the electronic device, wherein the server
15 is capable of supplying an image.

11. The electronic device of claim 10, wherein the first distance measurement
component comprises a proximity sensor.

20 12. The electronic device of claim 10, wherein the second distance measurement
component comprises a camera.

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13. The electronic device of claim 10, wherein the processor is further configured to perform operations comprising:

detecting a change in the distance between the display and the user using the first distance measurement component;

5 wherein the processor is configured to perform the determining of the desired display resolution comprising:

determining the desired display resolution of the display based on the distance, if the change in the distance exceeds a predetermined distance threshold.

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14. The electronic device of claim 10, further comprising:

a pupil orientation measurement component for measuring a pupil orientation of the user with respect to the display, the pupil orientation corresponding to a focus area on the display of a pupil of the user;

15 wherein the processor is further configured to interface with the pupil orientation measurement component, and perform operations comprising:

receiving the pupil orientation from the pupil orientation measurement component; and

20 calculating a focus area distance between the display and the pupil of the user based on the distance and the pupil orientation;

wherein the processor is configured to perform the determining of the desired display resolution comprising:

determining the desired display resolution of the display based on the focus area distance.

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15. The electronic device of claim 14, wherein the pupil orientation measurement component comprises a camera.

16. The electronic device of claim 14, wherein the processor is further configured
5 to perform operations comprising:

detecting a change in one or more of: the distance or the pupil orientation;

wherein the processor is configured to perform the determining of the desired display resolution comprising:

10 determining the desired display resolution of the display based on one or more of the distance or the focus area distance, if the change in the distance exceeds a predetermined distance threshold, or if the change in the focus area distance exceeds a predetermined focus area distance threshold.

17. The electronic device of claim 10, wherein the processor is configured to
15 perform the transmitting of the request comprising:

transmitting the request including an increment or a decrement to one of the plurality of display resolutions to the server, via the transceiver, wherein the increment or the decrement is based on the desired display resolution.

20 18. The electronic device of claim 10, wherein the processor is further configured to perform operations comprising:

receiving the image at the desired display resolution from the server, via the transceiver; and

displaying the image on the display.

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19. The electronic device of claim 10, wherein the processor is further configured to perform operations comprising:

receiving, from the server via the transceiver, the image at a different display resolution, wherein the different display resolution is based on the request; and

5 displaying the image on the display.