[0003a] An aspect of the present disclosure provides a method comprising determining, via one or more processors, a first position of a visual marker relative to an object; receiving a first magnetic field strength measurement corresponding to a first magnetic field strength at the first position; determining, via the one or more processors, a second position of the visual marker relative to the object; receiving a second magnetic field strength measurement corresponding to a second magnetic field strength at the second position; generating a heat map of the object based at least in part on the received first and second magnetic field strength measurements; obtaining a digital image of the object; and overlaying the digital image of the object with the heat map at a location corresponding to the first position and the second position, and wherein the heat map visually indicates the first and second magnetic field strengths on the digital image of the object.

[0003b] Another aspect of the present disclosure provides an apparatus comprising a sensor; a visual marker, wherein the visual marker is located on the sensor; and processing circuitry coupled with the sensor and operable to execute stored instructions that, when executed, cause the processing circuitry to receive, from the sensor, a first voltage value at a first position relative to an object; receive, from the sensor, a second voltage value at a second position relative to the object; determine a first magnetic field strength measurement at the first position based on the received first voltage value; determine a second magnetic field strength measurement at the second position based on the received second voltage value; determine an image of the object; generate a heat map with the first magnetic field strength measurement and the second magnet field strength; overlay the image of the object with the heat map at a location based on the first position and the second position.

[0003c] Another aspect of the present disclosure provides a method comprising receiving, via a sensor, a first voltage value at a first position relative to an object; receiving, via the sensor, a second voltage value at a second position relative to the object; determining, via processing circuitry, a first magnetic field strength measurement at the first position based on the received first voltage value; determining, via the processing circuitry, a second magnetic field strength measurement at the second position based on the received second voltage value; obtaining, via the processing circuitry, one or more digital images of the object; generating, via the processing circuitry, a heat map based on the first magnetic field strength measurement and the second magnetic field measurement; and updating, via the processing circuitry, each of the one or more digital images by overlaying the heat map at a location based on the first position and the second position.

CLAIMS

1. A method comprising:

determining, via one or more processors, a first position of a visual marker relative to an object;

receiving a first magnetic field strength measurement corresponding to a first magnetic field strength at the first position;

determining, via the one or more processors, a second position of the visual marker relative to the object;

receiving a second magnetic field strength measurement corresponding to a second magnetic field strength at the second position;

generating a heat map of the object based at least in part on the received first and second magnetic field strength measurements;

obtaining a digital image of the object; and

overlaying the digital image of the object with the heat map at a location corresponding to the first position and the second position, and

wherein the heat map visually indicates the first and second magnetic field strengths on the digital image of the object.

2. The method of claim 1, wherein the first and second magnetic field strengths are measured by a sensor, the sensor being a hall effect sensor or a coil.

3. The method of claim 2, wherein the visual marker is arranged or placed on the sensor.

4. The method of claim 1, wherein the object is a smartphone, a laptop, a tablet computing device, a wearable computing device, or a mobile computing device.

5. The method of claim 1, wherein a source of the first and second magnetic field strengths is an NFC reader coil.

6. The method of claim 1, wherein the visual marker is a shape, a color, a colored shape, a dot, a colored dot, a visual pattern, or machine-readable code.

7. An apparatus comprising:

a sensor;

a visual marker, wherein the visual marker is located on the sensor; and

processing circuitry coupled with the sensor and operable to execute stored instructions that, when executed, cause the processing circuitry to:

receive, from the sensor, a first voltage value at a first position relative to an object;

receive, from the sensor, a second voltage value at a second position relative to the object;

determine a first magnetic field strength measurement at the first position based on the received first voltage value;

determine a second magnetic field strength measurement at the second position based on the received second voltage value;

determine an image of the object;

generate a heat map with the first magnetic field strength measurement and the second magnet field strength;

overlay the image of the object with the heat map at a location based on the first position and the second position.

8. The apparatus of claim 7, wherein the sensor is a hall effect sensor or a coil.

9. The apparatus of claim 7, wherein the object is a smartphone, a laptop, a tablet computing device, a wearable computing device, or a mobile computing device.

10. The apparatus of claim 7, wherein a source of the first and second magnetic field strength measurements is an NFC reader coil.

11. The apparatus of claim 7, wherein the visual marker is a shape, a color, a colored shape, a dot, a colored dot, a visual pattern, or machine-readable code.

12. The apparatus of claim 7, wherein the apparatus has an elongated wand-like shape.

13. The apparatus of claim 7, comprising a wired interface or a wireless interface to couple the sensor with the processing circuitry.

14 . A method comprising:

receiving, via a sensor, a first voltage value at a first position relative to an object;

receiving, via the sensor, a second voltage value at a second position relative to the object;

determining, via processing circuitry, a first magnetic field strength measurement at the first position based on the received first voltage value;

determining, via the processing circuitry, a second magnetic field strength measurement at the second position based on the received second voltage value;

obtaining, via the processing circuitry, one or more digital images of the object;

generating, via the processing circuitry, a heat map based on the first magnetic field strength measurement and the second magnetic field measurement; and

updating, via the processing circuitry, each of the one or more digital images by overlaying the heat map at a location based on the first position and the second position.

15. The method of claim 14, wherein the sensor is a hall effect sensor or a coil.

16. The method of claim 14, wherein the object is a smartphone, a laptop, a tablet computing device, a wearable computing device, or a mobile computing device.

17. The method of claim 14, wherein a source of the first and second magnetic field strength measurements is an NFC reader coil.

18. The method of claim 14, wherein the visual marker is a shape, a color, a colored shape, a dot, a colored dot, a visual pattern, or machine-readable code.

19. The method of claim 14, wherein the sensor is comprised in an apparatus having an elongated wand-like shape.

20. The method of claim 14, comprising displaying, on a display device, the one or more images updated with the heat map.