CLAIMS:

1. A method for identifying a location of a mobile device comprising:

capturing, by the mobile device, ambient audio signals having a frequency range between 20 and 7,000 hertz, wherein the ambient audio signals comprise background noise stemming from the location of the mobile device and a first audio signal generated by a first non-linear ultrasonic frequency transmitter;

obtaining an audio fingerprint of the captured ambient audio signals; and

communicating the obtained audio fingerprint to a database such that upon receiving the audio fingerprint, the database identifies the location of the mobile device using the obtained audio fingerprint and audio fingerprints stored in the database, whereby each audio fingerprint in the database is associated with a unique location.

2. The method according to claim 1 wherein the first audio signal generated by the first non-linear ultrasonic frequency transmitter comprises intermodulation products of ultrasonic frequency signals transmitted by the first non-linear ultrasonic frequency transmitter.

3. The method according to claim 1 wherein the first audio signal generated by the first non-linear ultrasonic frequency transmitter comprises subharmonic signals that are by-products of ultrasonic frequency signals transmitted by the first non-linear ultrasonic frequency transmitter.

4. The method according to claim 3 wherein the subharmonic signals comprise arithmetic divisions of the fundamental frequencies of the transmitted ultrasonic frequency signals.

5. The method according to claim 1 wherein the obtaining the audio fingerprint of the captured ambient audio signal comprises:

determining from the ambient audio signal peaks and valleys occurring in the background noise and peaks and valleys occurring in the first audio signal; and

associating a pattern obtained from the determined peaks and valleys as the audio fingerprint of the captured ambient audio signal.

6. The method according to claim 1 wherein the step of the database identifying the location of the mobile device using the obtained audio fingerprint and audio fingerprints stored in the database comprises:

determiningif the obtained audio fingerprint matches an audio fingerprint stored in the database, whereby the obtained audio fingerprint is generated from the ambient audio signals using a distance matrix or weight matrix algorithm; and

pinpointing the location of the mobile device as the unique location associated with the matched audio fingerprint stored in the database when it is determined that the obtained audio fingerprint matches with an audio fingerprint stored in the database.

7. The method according to claim 1 wherein the ambient audio signal further comprises a second audio signal generated by a second non-linear ultrasonic frequency transmitter provided a distance away from the first non-linear ultrasonic frequency transmitter, whereby the second non-linear ultrasonic frequency transmitter is configured to transmit ultrasonic frequency signals that constructively interfere with the ultrasonic frequency signals transmitted by the first non-linear ultrasonic frequency transmitter.

8. The method according to claim 1 further comprising:

capturing an image of a label; and

transmitting the captured image to the database such that upon receiving the captured image, the database determines if the captured image corresponds to an unique image associated with the determined location of the mobile device.

9. The method according to claim 1 further comprising:

tagging a label; and

transmitting the tagged label to the database such that upon receiving the tagged label, the database determines if the tagged label corresponds to an unique label associated with the determined location of the mobile device.

10. The method according to claim 9 wherein the tagging the label comprises:

obtaining data from the label using near field communication or Bluetooth communication protocols.

11. A database configured to identify a location of a mobile device, the database comprising:

a processing unit; and

a non-transitory media readable by the processing unit, the media storing instructions that when executed by the processing unit, cause the processing unit to:

instruct the mobile device to:

capture ambient audio signals having a frequency range between 20 and 7,000 hertz, wherein the ambient audio signals comprise background noise stemming from the location of the mobile device and a first audio signal generated by a first non-linear ultrasonic frequency transmitter; and

obtain an audio fingerprint of the captured ambient audio signals and communicate the obtained audio fingerprint to the database;

receive the audio fingerprint and identify the location of the mobile device using the obtained audio fingerprint and audio fingerprints stored in the database, whereby each audio fingerprint in the database is associated with a unique location.

12. The database according to claim 11 wherein the first audio signal generated by the first non-linear ultrasonic frequency transmitter comprises intermodulation products of ultrasonic frequency signals transmitted by the first non-linear ultrasonic frequency transmitter.

13. The database according to claim 11 wherein the first audio signal generated by the first non-linear ultrasonic frequency transmitter comprises subharmonic signals that are by-products of ultrasonic frequency signals transmitted by the first non-linear ultrasonic frequency transmitter.

14. The database according to claim 13 wherein the subharmonic signals comprise arithmetic divisions of the fundamental frequencies of the transmitted ultrasonic frequency signals.

15. The database according to claim 11 wherein the instructions to obtain the audio fingerprint of the captured ambient audio signal comprises:

instructions for directing the processing unit to:

determine from the ambient audio signal peaks and valleys occurring in the background noise and peaks and valleys occurring in the first audio signal; and

associate a pattern obtained from the determined peaks and valleys as the audio fingerprint of the captured ambient audio signal.

16. The database according to claim 11 wherein the instructions for directing the database to identify the location of the mobile device using the obtained audio fingerprint and audio fingerprints stored in the database comprises:

instructions for directing the processing unit to:

determine if the obtained audio fingerprint matches an audio fingerprint stored in the database, whereby the obtained audio fingerprint is generated from the ambient audio signals using a distance matrix or weight matrix algorithm; and

pinpoint the location of the mobile device as the unique location associated with the matched audio fingerprint stored in the database when it is determined that the obtained audio fingerprint matches with an audio fingerprint stored in the database.

17. The database according to claim 11 wherein the ambient audio signal further comprises a second audio signal generated by a second non-linear ultrasonic frequency transmitter provided a distance away from the first non-linear ultrasonic frequency transmitter, whereby the second non-linear ultrasonic frequency transmitter is configured to transmit ultrasonic frequency signals that constructively interfere with the ultrasonic frequency signals transmitted by the first non-linear ultrasonic frequency transmitter.

18. The database according to claim 11 further comprising:

instructions for instructing the mobile device to direct the processing unit to:

capture an image of a label; and

transmit the captured image to the database such that upon receiving the captured image, the database determines if the captured image corresponds to an unique image associated with the determined location of the mobile device.

19. The database according to claim 11 further comprising:

instructions for instructing the mobile device to direct the processing unit to:

tag a label; and

transmit the tagged label to the database such that upon receiving the tagged label, the database determines if the tagged label corresponds to an unique label associated with the determined location of the mobile device.

20. The database according to claim 19 wherein the instructions for instructing the mobile device to direct the processing unit to tag the label comprises:

instructions for directing the processing unit to:

obtain data from the label using near field communication or Bluetooth communication protocols.