

WHAT IS CLAIMED IS:

1. An optical fingerprint verification method, applied to a mobile terminal comprising an application processor (AP), an optical sensor, and an optical fingerprint identification component,
5 wherein the method comprises:

controlling (201, 303, 403), by the mobile terminal, the optical sensor to detect an external ambient light intensity when the mobile terminal acquires a fingerprint collecting instruction, and sending the external ambient light intensity to the AP, wherein the fingerprint collecting instruction is inputted by a user or generated by the user touching a touch display screen;

10 after the AP determines that the external ambient light intensity falls in a target external ambient light intensity range, acquiring, by the AP of the mobile terminal, target fingerprint template data corresponding to the target external ambient light intensity range according to a correspondence between a plurality of external ambient light intensity ranges and sets of fingerprint template data, different external ambient light intensity ranges corresponding to
15 different fingerprint template data in the sets of fingerprint template data;

controlling (202, 305, 409), by the mobile terminal, the optical fingerprint identification component to collect fingerprint data;

determining (203, 306, 410), by the AP of the mobile terminal, whether the fingerprint data matches to the set of target fingerprint template data, and when the fingerprint data matches to the
20 set of target fingerprint template data, determining (204, 307, 411) by the mobile terminal that a fingerprint verification is passed,

wherein the method further comprises:

controlling (301, 401), by the mobile terminal, the optical fingerprint identification component to collect the set of fingerprint template data based on at least two external ambient
25 light intensities, so as to acquire at least two sets of fingerprint template data; and

establishing (302, 402), by the AP of the mobile terminal, the correspondence between the plurality of external ambient light intensity ranges and the sets of fingerprint template data according to the at least two sets of fingerprint template data.

2. The method according to claim 1, wherein the target external ambient light intensity range
30 comprises the external ambient light intensity.

3. The method according to claim 1 or 2, wherein the optical fingerprint identification component comprises an inner light source, and controlling (301), by the mobile terminal, the optical fingerprint identification component to collect the set of fingerprint template data based on the at least two external ambient light intensities so as to acquire at least two sets of fingerprint

template data comprises:

controlling, by the mobile terminal, the inner light source of the optical fingerprint identification component to collect at least four sets of original fingerprint data based on the at least two external ambient light intensities with at least two light intensities of the inner light source; and

selecting, by the mobile terminal, a set of original fingerprint data with a minimum noise from at least two sets of original fingerprint data collected based on a first external ambient light intensity, determining the set of original fingerprint data with the minimum noise as a set of fingerprint template data corresponding to the first external ambient light intensity, wherein the first external ambient light intensity is selected from the at least two external ambient light intensities.

4. The method according to any of claims 1-3, wherein the method further comprises:

determining (405), by the AP of the mobile terminal, whether the external ambient light intensity is smaller than a preset intensity;

when the external ambient light intensity is smaller than the preset intensity, detecting (406), by the AP of the mobile terminal, whether a current time is within a preset nighttime period; and

when the current time is within the preset nighttime period, controlling the optical fingerprint identification component to collect the fingerprint data.

5. The method according to claim 4, wherein the mobile terminal further comprises a gyroscope, and the method further comprises:

when the current time is outside the preset nighttime period, measuring (407) an angular velocity of the mobile terminal via the gyroscope; and

when it is detected that the angular velocity of the mobile terminal is greater than a preset angular velocity, controlling (408), by the mobile terminal, the optical fingerprint identification component not to collect the fingerprint data.

6. The method according to any of claims 1-5, wherein controlling, by the mobile terminal, the optical sensor to detect an external ambient light intensity comprises:

controlling the optical sensor to detect a total intensity of external ambient light as the external ambient light intensity; or

controlling the optical sensor to detect an intensity of external ambient light with the same wavelength as light emitted by an inner light source of the optical fingerprint identification component and determining the detected intensity of external ambient light as the external ambient light intensity.

7. A mobile terminal (500), comprising an application processor (AP, 501), an optical sensor

(502), and an optical fingerprint identification component (503), wherein,

the optical sensor (502) is configured to detect an external ambient light intensity when the mobile terminal (500) acquires a fingerprint collecting instruction, in which the external ambient light intensity is sent to the AP (501), and the fingerprint collecting instruction is inputted by a user or generated by the user touching a touch display screen;

the AP (501) is configured to acquire target fingerprint template data corresponding to the target external ambient light intensity range according to a correspondence between a plurality of external ambient light intensity ranges and sets of fingerprint template data after it is determined that the external ambient light intensity falls in a target external ambient light intensity range, different external ambient light intensity ranges corresponding to different fingerprint template data in the sets of fingerprint template data;

the optical fingerprint identification component (503) is configured to collect fingerprint data;

the AP (501) is configured to determine whether the fingerprint data matches to a set of target fingerprint template data corresponding to the external ambient light intensity and to determine that a fingerprint verification is passed when the fingerprint data matches to the set of target fingerprint template data,

the optical fingerprint identification component (503) is further configured to control the optical fingerprint identification component to collect the set of fingerprint template data based on at least two external ambient light intensities, so as to acquire at least two sets of fingerprint template data; and

the AP (501) is further configured to establish the correspondence between the plurality of external ambient light intensity ranges and the sets of fingerprint template data according to the at least two sets of fingerprint template data.

8. The mobile terminal (500) according to claim 7, wherein,

the target external ambient light intensity range comprises the external ambient light intensity.

9. The mobile terminal (500) according to claim 7 or 8, wherein the optical fingerprint identification component (503) comprises an inner light source, and when the optical fingerprint identification component (503) collects the set of fingerprint template data based on the at least two external ambient light intensities so as to acquire at least two sets of fingerprint template data, the optical fingerprint identification component (503) is configured to:

control the inner light source to collect at least four sets of original fingerprint data based on the at least two external ambient light intensities with at least two light intensities of the inner light source; and

select a set of original fingerprint data with a minimum noise from at least two sets of original

fingerprint data collected based on a first external ambient light intensity, determine the set of original fingerprint data with the minimum noise as a set of fingerprint template data corresponding to the first external ambient light intensity, wherein the first external ambient light intensity is selected from the at least two external ambient light intensities.

5 10. The mobile terminal (500) according to any of claims 7-9, wherein,
the AP (501) is further configured to determine whether the external ambient light intensity is smaller than a preset intensity;

the AP (501) is further configured to detect whether a current time is within a preset nighttime period when the external ambient light intensity is smaller than the preset intensity; and

10 the optical fingerprint identification component (503) is configured to collect the fingerprint data when the current time is within the preset nighttime period.

11. The mobile terminal (500) according to claim 10, wherein the mobile terminal (500) further comprises a gyroscope (506),

15 the gyroscope (506) is configured to measure an angular velocity of the mobile terminal (500) when the current time is beyond the preset nighttime period; and

the AP (501) is configured to control the inner light source of the optical fingerprint identification component (503) not to collect the fingerprint data when gyroscope (506) detects that the angular velocity of the mobile terminal (500) is greater than a preset angular velocity.

20 12. The mobile terminal (500) according to any of claims 7-11, wherein the optical sensor (502) is configured to detect the external ambient light intensity by:

controlling the optical sensor (502) to detect a total intensity of external ambient light as the external ambient light intensity; or

25 controlling the optical sensor (502) to detect an intensity of external ambient light with the same wavelength as light emitted by an inner light source of the optical fingerprint identification component (503) and determining the detected intensity of external ambient light as the external ambient light intensity.

13. A computer readable storage medium having computer programs for exchanging digital data stored thereon, wherein the computer programs are configured to cause a computer to perform the optical fingerprint verification method according to any of claims 1-6.