CLAIMS

[Claim 1] An offline shopping guide method, comprising:

obtaining, by a registration device associated with a shopping venue, QR code information from a shopping user;

collecting, by the registration device, biometric information of the shopping user;

receiving the biometric information of the shopping user and the QR code information uploaded by the registration device;

parsing the QR code information to obtain a user identifier (ID);

establishing and storing a binding relationship between the biometric information of the shopping user and the user ID;

obtaining the user ID of the shopping user based on the binding relationship between the biometric information and the user ID, and a scene ID of the shopping venue where the shopping user is located;

obtaining historical offline shopping data and historical online shopping data of the shopping user according to the user ID, and obtaining commodity information of the shopping venue according to the scene ID;

obtaining a commodity to be recommended to the shopping user according to the historical offline shopping data, the historical online shopping data, and the commodity information, the recommended commodity being a commodity in the shopping venue; and

sending augmented reality (AR) display information of the recommended commodity to a smart terminal of the shopping user, so that the smart terminal displays the recommended commodity in an AR mode,

wherein the sending AR display information of the recommended commodity to a smart terminal of the shopping user comprises:

sending AR display information of the recommended commodity to the smart terminal, wherein the recommended commodity is located on a commodity shelf outside a real photographing scene

collected by the smart terminal of the shopping user, and the AR display information comprises the commodity shelf location and commodity information of the recommended commodity; and

sending image feature data and AR navigation information of the recommended commodity to the smart terminal when triggering of the recommended commodity is received, so that the smart terminal performs AR navigation according to the AR navigation information and matches the image feature data with commodity image data obtained in the real photographing scene to look for the recommended commodity.

[Claim 2] The method according to claim 1, wherein the obtaining a scene ID of the shopping venue comprises:

receiving a device ID sent by the registration device of the shopping venue, the registration device being used to register the entry of a shopping user to the shopping venue; and

obtaining a scene ID of the shopping venue corresponding to the device ID.

[Claim 3] The method according to claim 2, wherein the registration device is mounted in an entrance access control of the shopping venue, or a commodity container of the shopping venue, or a commodity shelf of the shopping venue.

[Claim 4] The method according to claim 1, wherein

the obtaining the user ID of the shopping user comprises:

receiving biological information of the shopping user collected by the registration device of the shopping venue; and

obtaining, according to the binding relationship, the user ID corresponding to the biological information.

[Claim 5] The method according to claim 4, wherein the biological information comprises a face, a

voiceprint, a fingerprint, or a palm print of the shopping user.

[Claim 6] The method according to claim 1, further comprising:

receiving a user positioning location sent by an indoor positioning device of the shopping venue and a camera-captured image corresponding to the user positioning location in the shopping process of the shopping user;

conducting matching according to the user positioning location, the camera-captured image, and commodity layout information of the shopping venue, to obtain commodity browsing behavior information of the shopping user in the shopping process;

receiving shopping order data of the shopping user at the shopping venue and corresponding order commodity information; and

storing the commodity browsing behavior information, the shopping order data, and the order commodity information as historical offline shopping data of the shopping user at the shopping venue.

[Claim 7] The method according to claim 1, wherein the sending AR display information of the recommended commodity to a smart terminal of the shopping user comprises:

determining, according to the real photographing scene collected by the smart terminal of the shopping user, a recommended commodity on a commodity shelf in the real photographing scene; and

sending AR display information of the recommended commodity to the smart terminal of the shopping user, the AR display information comprising the commodity shelf location and commodity information of the recommended commodity, so that the smart terminal displays the commodity shelf where the recommended commodity is located and the commodity information.

[Claim 8] The method according to claim 1, wherein the smart terminal comprises a smart phone, AR glasses, or a display device mounted on the commodity container.

[Claim 9] An offline shopping guide apparatus, comprising:

an identifier (ID) obtaining module configured to:

obtain, by a registration device associated with a shopping venue, QR code information from a shopping user;

collect, by the registration device, biometric information of the shopping user;

receive the biometric information of the shopping user and the QR code information uploaded by the registration device;

parse the QR code information to obtain a user identifier (ID);

establish and store a binding relationship between the biometric information of the shopping user and the user ID; and

obtain the user ID of the shopping user based on the binding relationship between the biometric information and the user ID, and a scene ID of the shopping venue where the shopping user is located;

a data obtaining module configured to obtain historical offline shopping data and historical online shopping data of the shopping user according to the user ID, and obtain commodity information of the shopping venue according to the scene ID;

a recommendation processing module configured to obtain a commodity to be recommended to the shopping user according to the historical offline shopping data, the historical online shopping data, and the commodity information, the recommended commodity being a commodity in the shopping venue; and

a display processing module configured to send augmented reality (AR) display information of the recommended commodity to a smart terminal of the shopping user, so that the smart terminal displays the recommended commodity in an AR mode,

wherein sending AR display information of the recommended commodity to a smart terminal of the shopping user comprises:

sending AR display information of the recommended commodity to the smart terminal, wherein the recommended commodity is located on a commodity shelf outside a real photographing scene collected by the smart terminal of the shopping user, and the AR display information comprises the commodity shelf location and commodity information of the recommended commodity; and

sending image feature data and AR navigation information of the recommended commodity to the smart terminal when triggering of the recommended commodity is received, so that the smart terminal performs AR navigation according to the AR navigation information and matches the image feature data with commodity image data obtained in the real photographing scene to look for the recommended commodity.

[Claim 10] The apparatus according to claim 9, wherein

the ID obtaining module is configured to: when obtaining a scene ID of the shopping venue, receive a device ID sent by the registration device of the shopping venue, the registration device being used to register the entry of a shopping user to the shopping venue; and obtain a scene ID of the shopping venue corresponding to the device ID.

[Claim 11] The apparatus according to claim 9, wherein

the ID obtaining module is further configured to: obtain, according to the binding relationship, the user ID corresponding to the biological information when receiving the biological information of the shopping user collected by the registration device of the shopping venue.

[Claim 12] The apparatus according to claim 9, wherein

the data obtaining module is further configured to receive a user positioning location sent by an indoor positioning device of the shopping venue and a camera-captured image corresponding to the user positioning location in the shopping process of the shopping user; conduct matching according to the user positioning location, the camera-captured image, and commodity layout information of

the shopping venue, to obtain commodity browsing behavior information of the shopping user in the shopping process; receive shopping order data of the shopping user at the shopping venue and corresponding order commodity information; and store the commodity browsing behavior information, the shopping order data, and the order commodity information as historical offline shopping data of the shopping user at the shopping venue.

[Claim 13] The apparatus according to claim 9, wherein

the display processing module is specifically configured to determine, according to the real photographing scene collected by the smart terminal of the shopping user, a recommended commodity on a commodity shelf in the real photographing scene; and send AR display information of the recommended commodity to the smart terminal of the shopping user, the AR display information comprising the commodity shelf location and commodity information of the recommended commodity.

[Claim 14] A data processing device, comprising a memory, a processor, and a computer instruction stored in the memory and runnable on the processor, wherein the processor executes the instruction to realize the following steps:

obtaining, by a registration device associated with a shopping venue, QR code information from a shopping user;

collecting, by the registration device, biometric information of the shopping user;

receiving the biometric information of the shopping user and the QR code information uploaded by the registration device;

parsing the QR code information to obtain a user identifier (ID);

establishing and storing a binding relationship between the biometric information of the shopping user and the user ID;

obtaining the user ID of the shopping user based on the binding relationship between the biometric information and the user ID, and a scene ID of the shopping venue where the shopping user is located;

obtaining historical offline shopping data and historical online shopping data of the shopping user according to the user ID, and obtaining commodity information of the shopping venue according to the scene ID;

obtaining a commodity to be recommended to the shopping user according to the historical offline shopping data, the historical online shopping data, and the commodity information, the recommended commodity being a commodity in the shopping venue; and

sending augmented reality (AR) display information of the recommended commodity to a smart terminal of the shopping user, so that the smart terminal displays the recommended commodity in an AR mode,

wherein the sending AR display information of the recommended commodity to a smart terminal of the shopping user comprises:

sending AR display information of the recommended commodity to the smart terminal, wherein the recommended commodity is located on a commodity shelf outside a real photographing scene collected by the smart terminal of the shopping user, and the AR display information comprises the commodity shelf location and commodity information of the recommended commodity; and

sending image feature data and AR navigation information of the recommended commodity to the smart terminal when triggering of the recommended commodity is received, so that the smart terminal performs AR navigation according to the AR navigation information and matches the image feature data with commodity image data obtained in the real photographing scene to look for the recommended commodity.

[Claim 15] An offline shopping guide system, comprising:

a shopping venue registration device configured to obtain QR code information from a shopping user and collect biometric information of the shopping user;

a shopping guide server configured to receive the biometric information of the shopping user and the QR code information uploaded by the registration device, parse the QR code information to obtain a user identifier (ID), and establish and store a binding relationship between the biometric information of the shopping user and the user ID;

the shopping guide server further configured to obtain the user ID of the shopping user based on the binding relationship between the biometric information and the user ID, and a scene ID of the shopping venue according to the registration parameter, obtain a commodity to be recommended to the shopping user according to historical offline shopping data and historical online shopping data of the shopping user as well as commodity information of the shopping venue; and send augmented reality (AR) display information of the recommended commodity to a smart terminal of the shopping user; and

the smart terminal configured to display, according to the AR display information sent by the server, the commodity information and shelf information of the recommended commodity in an AR mode,

wherein sending AR display information of the recommended commodity to a smart terminal of the shopping user comprises:

sending AR display information of the recommended commodity to the smart terminal, wherein the recommended commodity is located on a commodity shelf outside a real photographing scene collected by the smart terminal of the shopping user, and the AR display information comprises the commodity shelf location and commodity information of the recommended commodity; and

sending image feature data and AR navigation information of the recommended commodity to the smart terminal when triggering of the recommended commodity is received, so that the smart terminal performs AR navigation according to the AR navigation information and matches the image

feature data with commodity image data obtained in the real photographing scene to look for the recommended commodity.

[Claim 16] The system according to claim 15, wherein the registration parameter comprises biological information of the shopping user, or a device ID of the registration device.

[Claim 17] The system according to claim 15, further comprising:

an offline data collection device configured to send a user positioning location of the shopping user at the shopping venue and a corresponding camera-captured image, as well as shopping order data and corresponding order commodity information to the shopping guide server, so that the shopping guide server obtains historical offline shopping data of the shopping user at the shopping venue.