

# Smart Tracker Patent Portfolio

Contact: [gustavo@rzv-ip.com](mailto:gustavo@rzv-ip.com)

**Shortened and redacted summary.  
More information is available upon request and under NDA.  
Contact Gustavo Aray at [gustavo@rzv-ip.com](mailto:gustavo@rzv-ip.com).**

**Disclaimer:** These materials comprise an offer for sale of patents by the owners. They are not intended to and shall not be interpreted as an offer or a request for patent license. The information is provided solely for the purpose of assisting the independent evaluation of the portfolio by prospective buyers. Nothing in this document shall constitute or be interpreted as legal analysis regarding the scope of the patents or other intellectual property rights. Any discussion of the use or potential use of the patent portfolio is for illustrative purposes only. In making a decision regarding this sales opportunity, potential purchasers must rely on their own examination and evaluation of the patents and portfolios including the merits and risks involved. No representation or warranties regarding the patents or portfolios are provided or implied. These materials and any other documents or information provided related to the patents or portfolios are intended for use by the receiving party solely for its use in engaging in the sales process and in determining whether to purchase the patents or portfolios. The seller reserves the right to modify or discontinue the sales process at any time including accepting offers prior to the completion of the due diligence period. The information provided herein or exchanged pursuant to the sales process is not intended to be notice or accusation of infringement of any of the patents or portfolios offered for sale, and shall not be used as proof of pre-litigation notice to or knowledge by the prospective buyer of the existence of potential infringement of any patents or portfolios offered for sale herein.

# Executive Summary

- RZV has been retained by Cha Hu Lian Technology, Inc. to effect the sale of its important and valuable Smart Tracker patent portfolio.
- Smart Trackers, popularized by Apple Air Tags and Samsung SmartTag+, comprise wireless-capable tags that users can attach to items they wish to track in order to prevent misplacement or loss. Growing at a CAGR of 12.4%, the Smart Tracker market is projected to reach US \$807m by 2025.
- The offered portfolio protects a novel system and method for power-efficient bidirectional tracking between a tracked personal object and a wearable device. Further, to prevent loss, proactive alerts are generated if the distance between the tracked object and the wearable device exceeds a user-set distance.
- The granted claims provide for the intelligent deployment of either Bluetooth or UWB in system that includes a wearable device (e.g., smart watch), a smart tracker, and a personal object with a tracking application (e.g., mobile phone). Specifically, the distance between the wearable device and the tracked personal object is first measured using low-power Bluetooth where UWB ranging is delayed until the distance between the wearable and the tracked object exceeds certain parameters, thus ensuring both accurate positioning performance and improved battery life.
- Buyers that may have an interest in the portfolio include Apple, Google (Fitbit), Chipolo, Inpixon, Kaltiot, Life360 (Tile), Orbit, Pebblebee, PROTAG, Samsung, Xiaomi, and XY Labs, among others.

**Offered Patents:**

US10930133B1  
CN210072891U

**Priority:**

2019

**Encumbrances:**

**Deal Structure:**

We will consider all proposals.

**Deadlines:**

Offers considered in the order received.

**Price**

**Expectations:**

(1) <https://www.mordorintelligence.com/industry-reports/smart-tracker-market>

# Invention Description

FIG. 1 of US 10,930,133 B1 illustrates an operation of the bidirectional tracking system. In certain embodiments, the invention provides for the following:

- a wearable device **10** with a Bluetooth and a UWB module, wherein the wearable device **10** is used for a user to wear or carry,
- a tracking tag **20**, and
- a valuable personal object, which is a mobile device **30** in this embodiment and can be other personal valuables, wherein the personal device includes a tracking application program
- the tracking tag **20** attached to the mobile device **30**,
- the distance (**D1**) between the wearable device **10** and the mobile device **30** is measured by a Bluetooth operating in either the tracking tag **20** or the valuable personal object **30**
- when the distance **D1** exceeds a first warning distance set by the user, a second distance (**D2**) is measured between the wearable device **10** and the tracking tag **20** using UWB
- when the second distance **D2** exceeds the second warning distance, an alert is provided to the wearable device **10**.

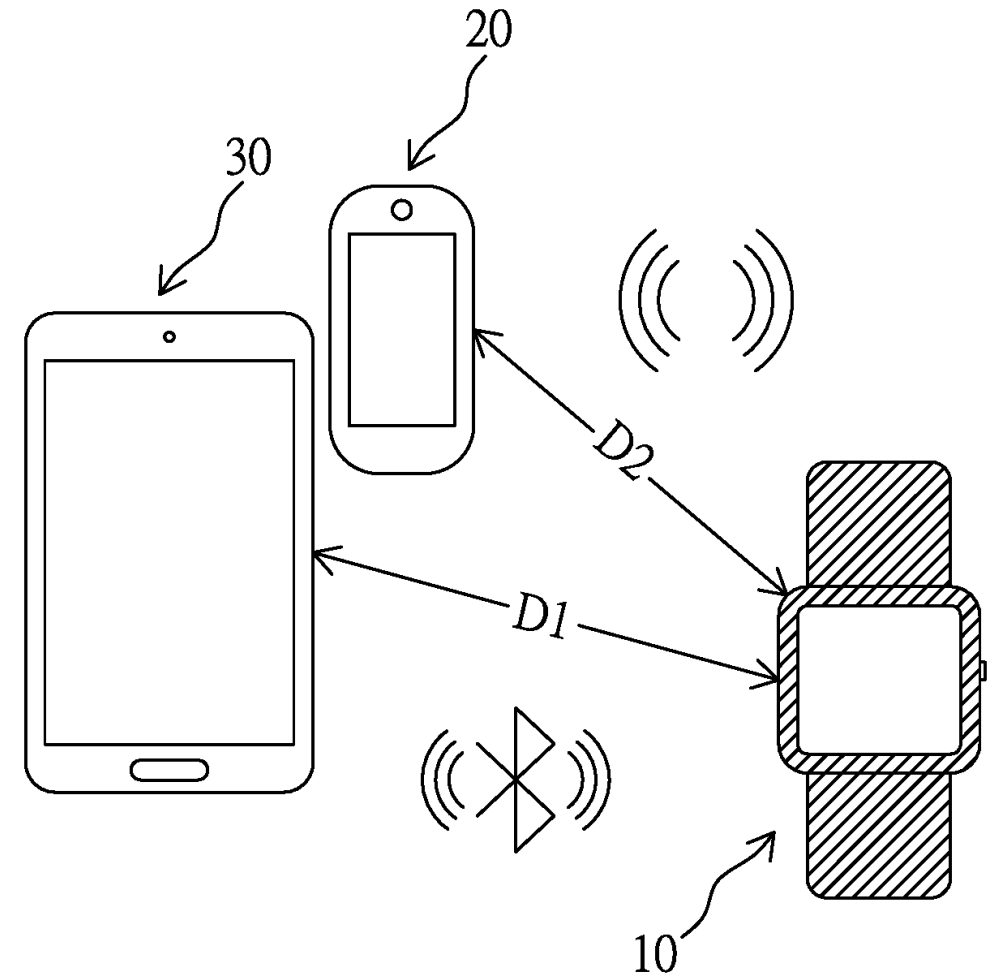


FIG. 1

# US 10,930,133 B1

  
US010930133B1

(12) **United States Patent**  
**Chen**

(10) **Patent No.:** **US 10,930,133 B1**  
(45) **Date of Patent:** **Feb. 23, 2021**

(54) **BIDIRECTIONAL TRACKING SYSTEM AND  
BIDIRECTIONAL TRACKING METHOD**

(71) Applicant: **Cha Hu Lian Technology Inc., Taipei  
(TW)**

(72) Inventor: **Ann-Pin Chen, Taipei (TW)**

(73) Assignee: **CHA HU LIAN TECHNOLOGY  
INC., Taipei (TW)**

(\*) Notice: Subject to any disclaimer, the term of this  
patent is extended or adjusted under 35  
U.S.C. 154(h) by 0 days.

(21) Appl. No.: **16/577,116**

(22) Filed: **Sep. 20, 2019**

(51) Int. Cl.  
**G08B 21/24** (2006.01)  
**G01S 11/06** (2006.01)  
**G01S 13/74** (2006.01)

(52) U.S. Cl.  
CPC ..... **G08B 21/24** (2013.01); **G01S 11/06**  
(2013.01); **G01S 13/74** (2013.01)

(58) **Field of Classification Search**  
CPC ..... **G08B 21/24**; **G01S 11/06**; **G01S 13/74**;  
**H04W 64/00**  
See application file for complete search history.

(56) **References Cited**  
U.S. PATENT DOCUMENTS

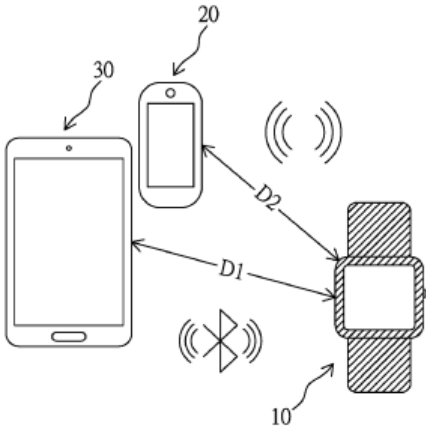
8,554,142 B2 \* 10/2013 Hoover ..... H04W 76/14  
455/41.2  
9,942,849 B1 \* 4/2018 Hanikarn ..... H04W 8/005  
2010/0015919 A1 \* 1/2010 Tian ..... H04W 8/005  
455/41.2  
2018/0099643 A1 \* 4/2018 Golsch ..... B60R 25/2018  
2019/0135229 A1 \* 5/2019 Ledvina ..... H04W 4/023

\* cited by examiner

Primary Examiner — Thomas D Alunkul  
(74) Attorney, Agent, or Firm — Guice Patents PLLC

(57) **ABSTRACT**  
A bidirectional tracking system including a wearable device  
and a tracking tag, the wearable device being for a user to  
wear or carry, and the tracking tag being for attaching to a  
valuable personal object, the wearable device including a  
first UWB module, a first Bluetooth module and a first alarm  
module; the tracking tag including a second UWB module;  
and the valuable personal object including a tracking applica-  
tion program; where the valuable personal object is con-  
figured to perform a Bluetooth ranging procedure with the  
first Bluetooth module to obtain a first distance, when the  
first distance is greater than a first warning distance, the  
first UWB module performs a UWB ranging procedure with  
the second UWB module to obtain a second distance, and  
when the second distance is greater than a second warning  
distance, the first alarm module sends a warning message.

**9 Claims, 4 Drawing Sheets**



## Bidirectional tracking system and bidirectional tracking method

|             |              |             |              |
|-------------|--------------|-------------|--------------|
| Application | US16/577,116 | Est. Expiry | Sep 20, 2039 |
| Priority    | Sep 20, 2019 | PTA         | 0 days       |

**Abstract:** A bidirectional tracking system including a wearable device and a tracking tag, the wearable device being for a user to wear or carry, and the tracking tag being for attaching to a valuable personal object, the wearable device including a first UWB module, a first Bluetooth module and a first alarm module; the tracking tag including a second UWB module; and the valuable personal object including a tracking application program; where the valuable personal object is configured to perform a Bluetooth ranging procedure with the first Bluetooth module to obtain a first distance, when the first distance is greater than a first warning distance, the first UWB module performs a UWB ranging procedure with the second UWB module to obtain a second distance, and when the second distance is greater than a second warning distance, the first alarm module sends a warning message.

# US 10,930,133 B1, Claim 1

---

1. A bidirectional tracking system comprising a wearable device and a tracking tag, the wearable device being for a user to wear or carry, the tracking tag being for attaching a personal object, and the bidirectional tracking system being characterized in that:

the wearable device includes a first UWB module, a first Bluetooth module and a first alarm module;

the tracking tag includes a second UWB module; and

the personal object includes a tracking application program;

wherein at least one selected from a group consisting of the tracking tag and the personal object has a second Bluetooth module, and the second Bluetooth module is configured to perform a Bluetooth ranging procedure with the first Bluetooth module to obtain a first distance, when the first distance is greater than a first warning distance, the first UWB module performs a UWB ranging procedure with the second UWB module to obtain a second distance, and when the second distance is greater than a second warning distance, the first alarm module sends a warning message.

# US 10,930,133 B1, Claim 9

---

9. A bidirectional tracking method for use between a wearable device and a personal object incorporating a tracking tag, the bidirectional tracking method including the steps of:

performing a first ID code verification procedure between the wearable device and the tracking tag and a second ID code verification procedure between the wearable device and the personal object, wherein the tracking tag is attached with the personal object;

performing a Bluetooth ranging procedure between the wearable device and the personal object or between the wearable device and the tracking tag to obtain a first distance, and recording a first comparison result of the first distance and a first warning distance in the wearable device or the personal object; and

performing a UWB ranging procedure between the wearable device and the tracking tag to obtain a second distance when the comparison result indicates that the first distance is greater than the first warning distance, recording a second comparison result of the second distance and a second warning distance in the wearable device or the tracking tag, and making at least one selected from a group consisting of the wearable device, the tracking tag and the personal object generate an alarm message when the second comparison result indicates that the second distance is greater than the second warning distance.

# CN 210072891 U

(19)中华人民共和国国家知识产权局



(12)实用新型专利



(10)授权公告号 CN 210072891 U  
(45)授权公告日 2020.02.14

(21)申请号 201921275139.1

(22)申请日 2019.08.07

(73)专利权人 超互联科技股份有限公司  
地址 中国台湾台北市松山区民生东路三段  
128号3楼

(72)发明人 陈安平

(74)专利代理机构 中科专利商标代理有限责任  
公司 11021

代理人 吴梦圆

(51)Int. Cl.  
G08B 21/24(2006.01)  
H04W 4/029(2018.01)

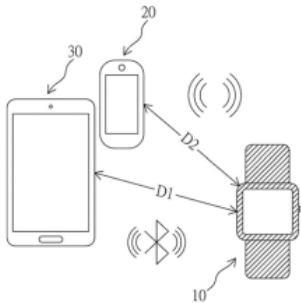
(ESM)同样的发明创造已同日申请发明专利

权利要求书1页 说明书4页 附图2页

(54)实用新型名称  
双向追踪系统

(57)摘要

本实用新型公开了一种双向追踪系统,其包含一穿戴装置及一追踪标签,其中,该穿戴装置用以供一使用者配戴或携带在身上,该追踪标签用以结合一移动装置,该穿戴装置包含一第一UWB模块、一第一蓝牙模块及一第一警示模块;该追踪标签包含一第二UWB模块;以及该移动装置具有一追踪应用程序功能模块;其中,该追踪标签和该移动装置中至少其一具有一第二蓝牙模块,该第二蓝牙模块用以和该第一蓝牙模块进行一蓝牙测距操作以获得一第一距离,当该第一距离大于一第一警戒距离时,该第一UWB模块会和该第二UWB模块进行一UWB测距程序以获得一第二距离,且当该第二距离大于一第二警戒距离时,该第一警示模块会发出一警示信息。



## 双向追踪系统 / Bidirectional tracking system

Application

201921275139.1U

Priority

Aug, 7, 2019

Est. Expiry

Aug 7, 2039

**Abstract:** The utility model discloses a two-way tracking system, which comprises a wearing device and a tracking label, wherein, the wearing device is used for a user to wear or carry on, the tracking label is used for combining a mobile device, the wearing device comprises a first UWB module, a first Bluetooth module and a first warning module; the tracking tag comprises a second UWB module; and the mobile device has a tracking application function module; wherein, at least one of the tracking label and the mobile device is provided with a second Bluetooth module, the second Bluetooth module is used for carrying out Bluetooth distance measurement operation with the first Bluetooth module to obtain a first distance, when the first distance is greater than a first warning distance, the first UWB module and the second UWB module carry out a UWB distance measurement procedure to obtain a second distance, and when the second distance is greater than a second warning distance, the first warning module can send out warning information.

# CN210072891U, Claim 1

1.一种双向追踪系统，其包含一穿戴装置及一追踪标签，其中，该穿戴装置用以供一使用者配戴或携带在身上，该追踪标签用以结合一移动装置，其特征在于：

该穿戴装置包含一第一UWB模块、一第一蓝牙模块及一第一警示模块；

该追踪标签包含一第二UWB模块；以及

该移动装置具有一追踪应用程序功能模块；

其中，该追踪标签和该移动装置中至少其一具有一第二蓝牙模块，该第二蓝牙模块用以和该第一蓝牙模块进行一蓝牙测距操作以获得一第一距离，当该第一距离大于一第一警戒距离时，该第一UWB模块会和该第二UWB模块进行一UWB测距操作以获得一第二距离，且当该第二距离大于一第二警戒距离时，该第一警示模块会发出一警示信息。

1. A two-way tracking system comprising a wearing device and a tracking tag, wherein the wearing device is adapted to be worn or carried by a user, and the tracking tag is adapted to be associated with a mobile device, the two-way tracking system comprising:

the wearable device comprises a first UWB module, a first Bluetooth module and a first warning module;

the tracking tag comprises a second UWB module; and

the mobile device is provided with a tracking application program functional module;

wherein, at least one of the tracking label and the mobile device is provided with a second Bluetooth module, the second Bluetooth module is used for carrying out Bluetooth distance measurement operation with the first Bluetooth module to obtain a first distance, when the first distance is greater than a first warning distance, the first UWB module and the second UWB module carry out UWB distance measurement operation to obtain a second distance, and when the second distance is greater than a second warning distance, the first warning module can send out warning information.

# Select Companies Active in the Segment

| Company                            | Exemplary Products                              | Link                                                                                                                                                                                                                                              |
|------------------------------------|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Apple                              | Air Tag                                         | <a href="https://www.apple.com/airtag/">https://www.apple.com/airtag/</a>                                                                                                                                                                         |
| Chipolo                            | Card Spot                                       | <a href="https://chipolo.net/">https://chipolo.net/</a>                                                                                                                                                                                           |
| Innova Technology LLC.<br>(PROTAG) | Duet                                            | <a href="https://theprotag.com/">https://theprotag.com/</a>                                                                                                                                                                                       |
| Inpixon                            | Inpixon Sensor Ultra                            | <a href="https://www.inpixon.com/technology/sensors/inpixon-sensor-ultra">https://www.inpixon.com/technology/sensors/inpixon-sensor-ultra</a>                                                                                                     |
| Kialiot                            | KALTIOT SMART IOT                               | <a href="https://kaltiot.com/">https://kaltiot.com/</a>                                                                                                                                                                                           |
| Life360 (Tile)                     | Tile Mate, Tile Pro, Tile Slim,<br>Tile Sticker | <a href="https://www.thetileapp.com/en-us/">https://www.thetileapp.com/en-us/</a>                                                                                                                                                                 |
| Orbit                              | Orbit Card, Orbit Keys,                         | <a href="https://findorbit.com/">https://findorbit.com/</a>                                                                                                                                                                                       |
| Pebblebee                          | Finder 2.0                                      | <a href="https://pebblebee.com/">https://pebblebee.com/</a>                                                                                                                                                                                       |
| Samsung                            | SmartTag+                                       | <a href="https://www.samsung.com/us/mobile/mobile-accessories/phones/samsung-galaxy-smart-tag-1-pack-black-ei-t5300bbegus/">https://www.samsung.com/us/mobile/mobile-accessories/phones/samsung-galaxy-smart-tag-1-pack-black-ei-t5300bbegus/</a> |
| XY Labs, Inc.                      | XY, XY2, XY3, XY4, XY4+ and<br>XY Find It       | <a href="https://xyfindit.com/">https://xyfindit.com/</a>                                                                                                                                                                                         |

**Thanks!**

Contact: [gustavo@rzv-ip.com](mailto:gustavo@rzv-ip.com)