TECH OFFER

Privacy Friendly Indoor Living Body Localization Using Iot Microwave Mimo Radar

KEY INFORMATION

TECHNOLOGY CATEGORY:
Electronics - Sensors & Instrumentation
Electronics - Radio Frequency
Healthcare - Medical Devices
Infocomm - Internet of Things
Infocomm - Wireless Technology

TECHNOLOGY READINESS LEVEL (TRL): TRL4
COUNTRY: SINGAPORE
ID NUMBER: TO174881

OVERVIEW

There is an increasing requirement for systems that can detect people in built up space. The requirements come from diverse fields such as safety, security and sustainability. In the field of safety, video cameras or wearables have conventionally been used and both come with significant downsides. Video cameras are highly dependent on the line of sight and are privacy invasive while wearables introduce a burden on the end user.

Microwave radar-based solutions are a field of research which can overcome the downsides by being accurate, not burdening the end user and by removing the requirement of line-of-sight. The company provides algorithmic solution in this space based on microwave radar in a Multi Input Multi Output (MIMO) configuration. The solution utilizes biological activity including respiration and heartbeat and consequently does not require measurement of the static environment in advance.

TECHNOLOGY FEATURES & SPECIFICATIONS

The technology consists of an algorithmic solution to allow detection of live bodies using microwave radar. The proof of concept was done using wireless routers with custom antennas.

- The solution provides a resolution of under 1m for localization.
- The solution is not dependent on 'line of sight'.
- The solution does not require any additional setup process for measurement of static environment and only a simple installation step needs to be performed.
- Human position is detected based on 'Angle of Arrival' calculations.
- The solution allows shared use of Wi-Fi hardware making it cost competitive versus millimeter wave based solutions.

POTENTIAL APPLICATIONS

The applications include but are not limited to:

- Child Safety Monitoring
- Presence Detection
- Living Body Localization
- Security and Intrusion Detection

UNIQUE VALUE PROPOSITION

The technology offers a non-invasive and a convenient method of tracking live bodies in a built-up environment. The competing technologies in the space are either inconvenient requiring the person to carry an instrument on them or are invasive because of the use of video cameras. Other non-invasive solutions such as those based on infrared suffer from performance issues as they are adversely affected by environmental factors while the ones using radar and AI require a setup step to recognize the static environment. AI based solutions also lack the capability of localization. An additional advantage of the technology is that it uses standard Wi-Fi allowing routers to compliment or replace additional sensor installation requirements in some cases.