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Wireless Positioning and Tracking Method and Systems

This new wireless positioning system uses multiple transmitting antennae and phase difference of arrival measurements for highly accurate, interference-resistant, sub-five-millimeter location tracking that is optimized for indoor use.

The commercial success and mass adoption of GPS technology has triggered a great interest in positioning systems with higher accuracy and better indoor performance. Major companies, like Google, Apple, and Nokia, are investing in new technologies, such as Wi-Fi and Bluetooth tracking or inertial navigation, to supplement the accuracy of GPS and improve performance. Even with these improvements, the additional wireless signals are prone to scattering and interference, and accuracy has only reached about 2.5 meters.

A Purdue University researcher has developed a new wireless positioning technology that has significantly improved performance inside buildings. Utilizing multiple transmitting antennae and phase difference of arrival measurements, this new system can accurately position a tracking device within less than five millimeters, and this position can be updated about thirty times per second. It is more resistant to interference or scattering than Wi-Fi or Bluetooth-based systems, and when used in homes, this system would provide precise location information for game systems, mobile devices, pet collars, etc.

Advantages:

-Highly accurate spatial and temporal resolution

-Resistant to scattering and interference

-Optimized for indoor use

TRL: 5

Intellectual Property:

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Category
Robotics & Automation/Perception & Sensing

Authors
Byunghoo Jung

Further information
Matt Halladay
MRHalladay@prf.org

Erinn Frank
EEFrank@prf.org

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Provisional-Patent, 2013-04-26, United States

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Provisional-Patent, 2015-05-20, United States

PCT-Patent, 2016-05-20, WO

Keywords: wireless positioning technology, high accuracy indoor positioning, Phase Difference of Arrival, PDoA, indoor navigation, indoor location tracking, ultra-precise positioning, sub-centimeter accuracy, resistant to interference, improved indoor performance, Circuits, Computer Hardware, Electrical Engineering, GPS, Instrumentation, Sensors