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Indoor Localization Using LTE Signals with Synthetic Aperture Navigation

Tech ID: 34087 / UC Case 2020-345-0

BRIEF DESCRIPTION

This technology enhances indoor pedestrian localization accuracy using LTE signals by mitigating multipath errors through synthetic aperture navigation.

FULL DESCRIPTION

A novel approach to indoor localization that leverages broadband communication signals, specifically LTE carrier phase measurements, to improve accuracy. By synthesizing an antenna array from the motion of a receiver and combining received data, this method suppresses multipath error and enhances navigation precision by determining the direction-of-arrival (DOA) of incoming signals.

SUGGESTED USES

- » Emergency response systems for precise indoor localization.
- » Navigation solutions for malls, airports, hospitals, and storage facilities.
- » Enhanced indoor positioning for consumer mobile devices.
- » Infrastructure-less indoor tracking systems for logistics and retail.

ADVANTAGES

- » Improves indoor localization accuracy by effectively mitigating multipath errors.
- » Utilizes existing LTE signals, eliminating the need for additional infrastructure.
- » Enhances precision through carrier phase measurements and synthetic aperture navigation.
- » Capable of determining accurate DOA for improved navigation observables.
- » Adaptable to various indoor environments without the need for dedicated sensors.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	11,454,726	09/27/2022	2020-345

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OTHER INFORMATION

CATEGORIZED AS

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