INDOOR POSITION TRACKING USING QR CODE MARKERS

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Technical Documentation and IP Rights Statement

NaviFloor Robotics, Inc.

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1. PROPRIETARY NOTICE AND CONFIDENTIALITY

This document contains confidential and proprietary information belon

exclusively to NaviFloor Robotics, Inc., a Delaware corporation ("Com

technical methods, processes, and systems described herein are prot

Patent Applications No. 17/234,567 and No. 17/234,568, filed March 2

2. TECHNICAL OVERVIEW

2.1 System Architecture

The Indoor Position Tracking System ("System") utilizes strategically p

code markers integrated with the Company's proprietary NaviCore(TM

platform to enable precise positional awareness for autonomous mobi

(AMRs) within enclosed industrial environments.

2.2 Core Components

The System comprises:

(a) High-contrast QR code markers with embedded positional metada

(b) Optical recognition modules with 180-degree field of view

(c) Real-time position calculation algorithms

(d) Spatial mapping database

(e) Integration APIs for the NaviCore(TM) platform

3. TECHNICAL SPECIFICATIONS

3.1 QR Code Implementation

- Marker Size: 150mm x 150mm
- Error Correction Level: H (High)
- Data Capacity: 256 bytes
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Minimum Reading Distance: 0.5m

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Maximum Reading Distance: 8.0m

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Position Accuracy: 15mm at 3m distance

3.2 Processing Parameters

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Scan Rate: 60 Hz

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Position Update Frequency: 10 Hz

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Maximum Processing Latency: 16.7ms

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Minimum Light Level: 50 lux

4. INTELLECTUAL PROPERTY RIGHTS

4.1 Ownership

All intellectual property rights, including but not limited to patents, copyrights, trade secrets, and know-how related to the System are ex owned by NaviFloor Robotics, Inc.

4.2 Protected Elements

The following elements are specifically protected:

(a) QR code generation algorithms

(b) Position calculation methodologies

(c) Error correction protocols

(d) System calibration procedures

(e) Integration specifications

(f) Source code implementations

5. IMPLEMENTATION REQUIREMENTS

5.1 Environmental Conditions

The System requires:

(a) Ambient temperature: 0 C to 45 C

(b) Humidity: 10% to 90% non-condensing

(c) Minimum ceiling height: 2.5m

(d) Maximum ceiling height: 12m

(e) Adequate lighting per Section 3.2

5.2 Installation Parameters

QR code markers must be installed:

(a) At intervals not exceeding 15m

(b) At all critical navigation points

(c) With unobstructed line of sight

(d) On stable, vibration-free surfaces

(e) According to Company installation guidelines

6. PERFORMANCE METRICS

6.1 Accuracy Specifications

The System guarantees:

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Absolute Position Accuracy: 25mm

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Heading Accuracy: 0.5 degrees

- Update Rate: 10Hz minimum
- Recovery Time: <500ms

6.2 Reliability Requirements

- Mean Time Between Failures (MTBF): >50,000 hours
- System Availability: 99.99%
- Error Detection Rate: >99.999%
- False Positive Rate: <0.0001%

7. LEGAL COMPLIANCE

7.1 Regulatory Compliance

The System complies with:

(a) ISO/IEC 18004:2015 (QR Code specifications)

(b) IEC 61496-1:2020 (Safety of machinery)

(c) EN 12100:2010 (Machine safety)

(d) UL 1740 (Robot safety requirements)

7.2 Safety Classifications

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Safety Integrity Level (SIL): 2

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Performance Level (PL): d

Category: 3 (EN ISO 13849-1)

8. CERTIFICATION

The undersigned hereby certifies that this document accurately repres
technical specifications and intellectual property rights of NaviFloor Rc
Inc.'s Indoor Position Tracking System using QR Code Markers.

EXECUTED this 15th day of December, 2023.

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## 9. DOCUMENT CONTROL

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