MULTI-FLOOR NAVIGATION AND MAPPING SYSTEM

MULTI-FLOOR NAVIGATION AND MAPPING

TECHNICAL SPECIFICATION AND IP DOCUMENTA

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1. PROPRIETARY NOTICE

This document contains confidential and proprietary information belon

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

This system specification describes the Company's protected intellect

property relating to multi-floor autonomous navigation and mapping te

2. SYSTEM OVERVIEW

1. The Multi-Floor Navigation and Mapping System ("System") compri

2. The System incorporates the following core technological compone

a) Advanced LiDAR-based simultaneous localization and mapping (SL

b) Multi-sensor fusion architecture

c) Proprietary depth-sensing algorithms

d) Dynamic obstacle avoidance protocols

e) Real-time map updating and sharing capabilities

3. PROTECTED INTELLECTUAL PROPERTY

1. Patents

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US Patent No. 11,234,567: "Method for Real-Time Multi-Floor Robot N

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US Patent No. 11,345,678: "System for Autonomous Floor Transition

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PCT Application No. PCT/US2023/012345 (pending)

2. Trade Secrets

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Proprietary sensor calibration methodologies

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Custom SLAM optimization algorithms

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Floor transition detection parameters

Surface material classification database

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Map merge protocols for multi-robot deployments

4. TECHNICAL SPECIFICATIONS

1. Mapping Capabilities

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Resolution: 1cm spatial accuracy

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Maximum mapped area: 100,000 sq ft per floor

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Maximum number of floors: 12

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Update frequency: 10Hz

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Map storage format: Proprietary .NFM format

2. Navigation Parameters

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Maximum navigation speed: 2.0 m/s

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Minimum hallway width: 1.2m

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Maximum slope handling: 15 degrees

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Obstacle detection range: 25m

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Position accuracy: 3cm

5. SYSTEM ARCHITECTURE

1. Hardware Components

- Custom-designed LiDAR array
- Inertial Measurement Unit (IMU)
- Depth cameras
- Floor transition sensors
- Edge computing unit

2. Software Components

NaviCore(TM) navigation engine

- MapFusion(TM) multi-floor mapping module

- ObstacleNet(TM) detection system

- FloorTransit(TM) elevation change handler

- CloudSync(TM) map distribution system

6. IMPLEMENTATION REQUIREMENTS

1. The System shall only be implemented on Company-approved hard

2. All System components must maintain specified security protocols:

- AES-256 encryption for data transmission
- Secure boot verification
- Signed firmware updates
- Access control authentication

7. CONFIDENTIALITY AND USAGE RESTRICTIONS

1. This document and all technical information contained herein are su

2. No portion of the System may be reverse engineered, decompiled,

8. WARRANTY AND LIABILITY

1. The Company makes no warranties regarding the System beyond t

2. The Company shall not be liable for any damages arising from una

9. CERTIFICATION

The undersigned hereby certifies that this document accurately repres
technical specifications and intellectual property status of the Multi-Flo
Navigation and Mapping System as of the date indicated below.

NAVIFLOOR ROBOTICS, INC.

By:

Dr. Elena Kovacs

Chief Research Officer

Date: December 15, 2023

10. DOCUMENT CONTROL

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