FLOOR PATTERN RECOGNITION USING COMPUTER VISION

FLOOR PATTERN RECOGNITION USING CO

TECHNICAL DISCLOSURE AND INTELLECTUAL F

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Classification: CONFIDENTIAL - Level 2

Owner: NaviFloor Robotics, Inc.

1. OVERVIEW AND SCOPE

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1. This document describes the proprietary computer vision technology and respectively.

2. The technology detailed herein encompasses both hardware configurations

2. TECHNICAL SPECIFICATIONS

1. System Architecture

The floor pattern recognition system comprises:

- (a) Multi-spectral imaging array with minimum resolution of 1280x960 pixe
- (b) Depth-sensing LiDAR module operating at 905nm wavelength
- (c) Real-time processing unit with dedicated tensor processing capabilities

(d) Surface texture analysis algorithms
(e) Machine learning model training infrastructure
2. Core Technologies
2.1. Pattern Recognition Methodology
Hierarchical feature extraction using modified ResNet-50 architecture
Therarchical feature extraction using mounted Resivet-50 architecture
Multi-scale texture analysis with Gabor filter banks
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Real-time surface classification using proprietary neural network architecture
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Adaptive threshold determination for varying lighting conditions	S	
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2.2. Surface Characterization		
Dynamic coefficient of friction estimation		
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Material composition inference		
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Wear pattern detection and analysis		
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Surface irregularity mapping		
3. INTELLECTUAL PROPERTY CLAIMS		

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1. Protected Elements

The following elements are claimed as trade secrets and/or patent-pending innovations:

- (a) Adaptive neural network architecture for real-time surface classification
- (b) Multi-modal sensor fusion algorithms for texture analysis
- (c) Proprietary calibration methodologies for varying environmental condition
- (d) Machine learning model training protocols specific to industrial floor surfaces
- (e) Error correction and validation frameworks

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2. Derivative Works

Any improvements, modifications, or derivative works based on the core
technology described herein shall be owned exclusively by NaviFloor Robot
Inc.
4. CONFIDENTIALITY AND USAGE RESTRICTION

1. All information contained in this document is strictly confidential and con

Restricted to authorized personnel with signed NDAs

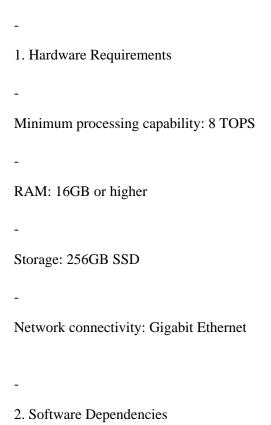
Subject to compartmentalized access controls

2. Access Limitations

- - 6 Requires minimum security clearance level 2
Must be accessed through secure VDR environment only
3. Usage Restrictions
No reverse engineering permitted
No unauthorized reproduction or distribution
No public disclosure without written authorization
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No competitive analysis or benchmarking

5. IMPLEMENTATION REQUIREMENTS



- - 8 CUDA 11.4 or higher
TensorRT 8.0+
OpenCV 4.5+
Proprietary NaviFloor Runtime Environment v3.2

6. COMPLIANCE AND CERTIFICATION

1. The technology described herein complies with:

ISO/IEC 27001:2013 Information Security Management

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IEC 61508 Functional Safety Standard

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CE marking requirements for industrial equipment

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ANSI/RIA R15.06-2012 Industrial Robot Safety

7. VERIFICATION AND VALIDATION

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1. Testing Protocols

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Automated unit testing suite

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Integration testing framework

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Performance validation metrics

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Safety compliance verification

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2. Quality Assurance

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Continuous monitoring system

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Error logging and analysis

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Performance metrics tracking

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Regular calibration requirements

8. LEGAL NOTICES

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9. CERTIFICATION

The undersigned hereby certifies that the information contained in this document is accurate and complete as of the Effective Date.

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By:

Dr. Elena Kovacs

Chief Research Officer

NaviFloor Robotics, Inc.

Date: _ 12 _

Witness:

James Wilson

Chief Financial Officer

NaviFloor Robotics, Inc.

10. DOCUMENT CONTROL

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