

VISUAL-INERTIAL NAVIGATION SYSTEM FOR INDOOR ROBOTS

VISUAL-INERTIAL NAVIGATION SYSTEM FOR

TECHNICAL SPECIFICATION AND IP RIGHTS DOCUMENT

Document ID: VINS-2023-104

Effective Date: January 11, 2024

Version: 3.2

Classification: CONFIDENTIAL

1. OVERVIEW AND SCOPE

1. This document describes the proprietary Visual-Inertial Navigation technology.
2. The VINS technology comprises hardware components, software algorithms, and integration protocols.

2. TECHNICAL SPECIFICATIONS

1. **Core Components**

- a) Dual stereoscopic camera array (Model: NF-CAM2024)
- b) Industrial-grade IMU unit (Model: NF-IMU850)
- c) Custom FPGA-based processing unit (Model: NF-PROC-V3)
- d) Proprietary sensor fusion algorithms

2. **Performance Parameters**

- a) Positioning accuracy: 2.5cm in normal operating conditions
- b) Update rate: 200Hz

c) Initialization time: <3 seconds

d) Operating temperature range: 0 C to 45 C

3. INTELLECTUAL PROPERTY RIGHTS

1. **Patents**

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US Patent No. 11,234,567: "Method for Real-time Visual-Inertial Sensing and Localization"

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US Patent No. 11,345,678: "System for Indoor Robot Navigation Using Deep Learning"

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

2. **Proprietary Software**

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NaviCore(TM) Navigation Engine v4.2

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SensorFusion(TM) Algorithm Suite v2.1

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TerrainMap(TM) Processing Library v3.0

4. DEVELOPMENT HISTORY AND OWNERSHIP

1. The VINS technology was developed internally by Company's R&D
2. All intellectual property rights, including patents, trade secrets, and
3. Development contributors have executed appropriate assignment a

5. THIRD-PARTY COMPONENTS

1. ****Licensed Components****

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OpenCV Library (Apache 2.0 License)

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Eigen Matrix Library (Mozilla Public License 2.0)

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ROS2 Navigation Stack (Apache 2.0 License)

2. All third-party components are used in compliance with respective licenses.

6. CONFIDENTIALITY AND PROTECTION

1. The VINS technology contains trade secrets and confidential information.

2. Access to technical documentation is restricted to authorized personnel.

3. Source code and design specifications are maintained in secure repository

7. COMMERCIAL DEPLOYMENT

1. **Current Implementation**

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NaviFloor AMR Series 2000

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NaviFloor AMR Series 3000

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Custom implementations for strategic partners (under separate agreement)

2. **Usage Restrictions**

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Limited to Company's products and authorized partners

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No reverse engineering permitted

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No unauthorized modifications or derivatives

8. CERTIFICATION AND COMPLIANCE

1. **Safety Certifications**

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CE Marking (EU)

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UL Certification (USA)

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RoHS Compliance

2. **Industry Standards**

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ISO/TS 15066:2016 (Robots and robotic devices)

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IEC 61508 (Functional Safety)

9. WARRANTY AND DISCLAIMER

1. Company warrants that it has full rights to the VINS technology and
2. THIS TECHNOLOGY IS PROVIDED "AS IS" WITHOUT WARRANTY

10. EXECUTION

IN WITNESS WHEREOF, this document has been executed by the authorized
representative of NaviFloor Robotics, Inc.

By: - 8 -

Name: Dr. Elena Kovacs

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