SLAMTEC

SLAMKIT

Reliable Mapping and Localization Solution

Specification

- Effective
- Reliable
- Stable

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I. Introduction

SLAMKIT is the industry's first commercial solution to independently provide mapping and localization functionality, empowering the mobile robotics field with industry-leading scalability and stability. It can be embedded in a robot's controller through software licensing, enabling the robot to map and localize autonomously. Customers can customize robot applications easily through standardized software interfaces.

II. Components of SLAMKIT

The current SLAMKIT product empowers customer robots with mapping and positioning capabilities through software licensing. As shown in the figure below, the Product form consists of three parts: Slamtec RPLIDAR, SLAMKIT License card, and SLAMKIT License Software.

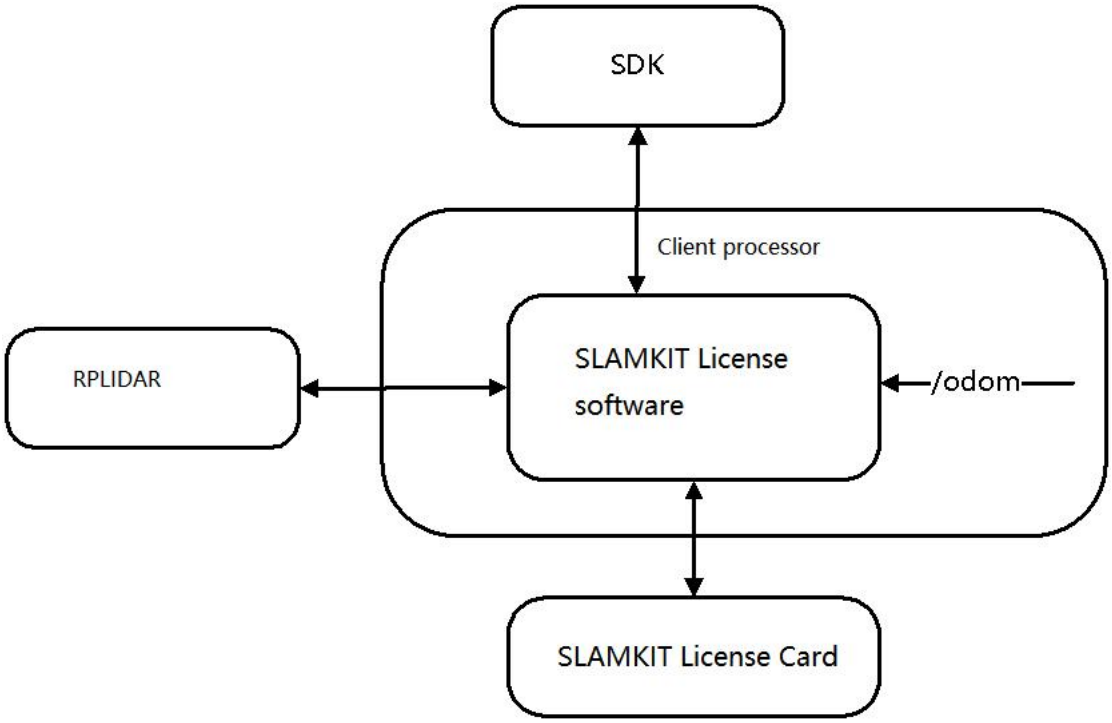
RPLIDAR A Series/ S Series/LPX-T1

SLAMKIT License Card

SLAMKIT License Software

III. How SLAMKIT Works

The core of SLAMKIT is the authorized software part. Its system diagram is shown in the following diagram. The input is RPLIDAR data, licensed card’s sensor data, and odometer data. The RPLIDAR data and licensed card’s sensor are obtained by independent drivers of authorized software. The odometer data comes from the ROS node on the customer side. The output of the system can be defined as a toolchain available for secondary development on the upper layer, including visual interaction tools Robostudio, C++ sdk, JAVA sdk, Restful API sdk, ROS sdk, etc.



IV. SLAMKIT's Key Parameters

Size(License Card's Size)	70.8mm*63.4mm*25.2mm
Size(RPLIDAR)	refer to Slamtec's RPLIDAR manual
Max mapping area	500,000m² ~1,200,000m²
Map resolution	1cm/2.5cm/5cm(optional)
Real-time localization deviation（typ）	± 5mm,± 1°
localization stability	Our robot can function well even with a 50% change in map
Maximum distance range	50m（typical value, specific depending on radar selection）
Sample frequency	10 ~ 20Hz
Localization output frequency	20 ~ 100Hz

V. Hardware and System Requirements

SLAMKIT authorized software is an application that runs on a client's processor, and its related features are shown in the following table:

Description	Explanation
Supported processor chip types	Intel x86 x64 series chips; ARMV7/V8 series chips

Supported operating systems	Ubuntu 16.04, 18.04, 20.04, 22.04, among which Ubuntu 16.04 is the most stable
Hardware interface requirements	1 * USB2.0 interface connected to the authorization box; 1 * Ethernet port, 1 * serial port/1 * USB interface to RPLIDAR + 1 * power supply interface. Please refer to the corresponding RPLIDAR datasheet for details. It should be noted that a network port of 100Mbps is sufficient; USB interface requires an adapter cable and is not recommended for use, as there may be signal interference.
CPU usage	**RK3399：** max to 2 * A72 + 2 * A53 **Intel Celeron J3455:** max to 2.5 core PS: Based on the actual evaluation results
Memory occupancy	**Mapping mode:** 5cm resolution avg 2GB **Positioning mode:** 5cm resolution, maximum area of 250,000m² flat map, max to 2.5GB PS: the memory occupancy increases with the increase of mapping area and resolution
Disk space	Above 15GB is better, of which log storage space is 5GB; core dump storage space is 10GB
Software interface	Subscribe to ROS TOPIC /odom

It should be noted that after SLAMKIT runs on the client's processor, Slamtec needs to evaluate whether the iteration frequency of each core thread meets the application requirements.If the client wants to use Slamtec's processor,please directly contact the Slamtec support team.

VI. List of products

Description	Quantity	Remark
RPLIDAR	1	A series / S series/ LPX-T1
License Card	1	70.8mm*63.4mm*25.2mm
License Software	1	License software runs on client's processor
Processor	1	optional