Sensor Fusion Framework

A Basic Framework for Sensor Fusion Implementations

Overview

With our main objective is being able to create a better environment for floor staff through the automation of in-store logistics there is the need to improve the effectiveness and efficiency of Serena on a software level. Serena is an autonomous mobile robot equipped with two wheels and sensory devices. To help with an effective and efficient use of these sensors to aid in achieving our set objectives; that is Simultaneous localization and mapping (SLAM) and navigation, there is the need to build a Sensor Fusion Framework on which we could intend build a Sensor Fusion Implementation in a modular form.

Sensor fusion is the process of merging multiple sources of data into one conceptualized model that is more accurate and less uncertain.

Milestones

1. Design Framework Architecture
2. Implement the conceptual Framework Architecture
3. Test the proposed solution
4. Finalize Design and Application Programming Interface (API) Documentation
5. Ship for review

Functional Requirements

The suggested Sensor Fusion Framework must be able to:

1. Accept different sensor architectures.
2. Allow different fusion methods

Non-Functional Requirements

The suggested Sensor Fusion Framework shall:

1. Follow the Objected Oriented Programming (OOP) Design Pattern.
2. Be easy to extend or modify.
3. Support the ROS2 (C++).

Architecture