

# Renesas Ready Ecosystem Partner Solution Ignitarium Vacuum Cleaner Robot

**RENESAS**

PARTNER  
NETWORK

READY

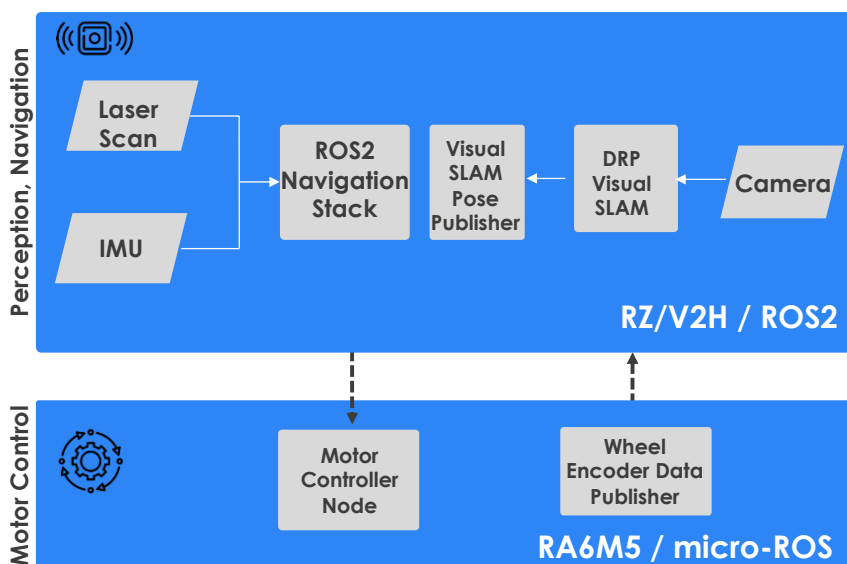
## Solution Summary

Vacuum Cleaner Robot is an autonomous mobile robot expressly created to show the practical uses of Renesas components in empowering small-scale robotic applications. This functionality revolves around the incorporation of Renesas [RZ/V2H MPU](#) as its primary processing unit, expertly handling tasks like SLAM (Simultaneous Localization and Mapping), precise localization, AI-driven perception, and intricate path planning. To complement the RZ/V2H, low-level motor control is driven through Renesas [RA6M5 MCU](#), featuring a customized setup complete with an integrated IMU (Inertial Measurement Unit) to substantially enhance localization.

## Features/Benefits

- Support DRP based Monocular Visual SLAM and additional input to the ROS2 navigation stack for better localization
- DRP-AI for advanced deep learning neural network-based features (ex: obstacle avoidance)
- Full ROS2 framework to enable sensor integration, localization/ SLAM mapping, path-planning and navigation with 2D Lidar
- Free RTOS + micro-ROS combination enables motor control & micro-ROS publisher for wheel encoder data

## Diagrams/Graphics

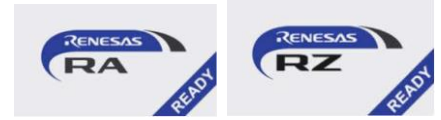


## Target Markets and Applications

- Residential
- Hospitality
- Offices
- Healthcare
- Retail

## Product Engineering Services

Long-standing Ecosystem Partner for Renesas



**2012**

**Year Established**

**100+**

**Projects Delivered**

**8 +**

**Global Locations**

## Highlights

- Ignitarium is a boutique product engineering house that combines its expertise in Semiconductor, Embedded software and AI to realize cost-effective system solutions to solve demanding real-world use cases
- With focussed efforts in building capabilities in AI and Robotics, Ignitarium has emerged as a trusted engineering partner for large global enterprises as well as AI start-ups

## Services Overview

- Embedded Software
- AI & Computer Vision
- Robotics Software



## Focus Areas

- Perception AI
  - Camera, LiDAR, Radar
- SLAM & Path Planning

## AI Software Offerings

Data Preparation



MLOPs Best Practices



Model Porting & Optimization

Model Development



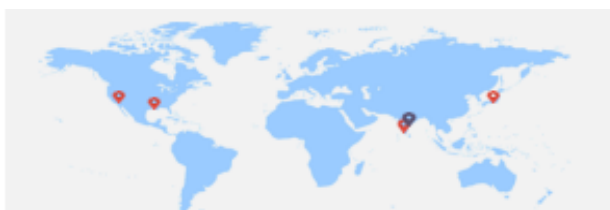
System Architecture & Application



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### Ignitarium

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