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ROBOTIC HARDWARE SYSTEM

AUTOMATED GUIDED VEHICLE (AGV)

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MAIN COMPONENTS

Presentation Outline

02

#1 Physical Design for various applications
#2 Propulsion System
#3 Navigation System (Sensors) & Control
#4 Data Collection
#5 Data transmission
#6 Power Management

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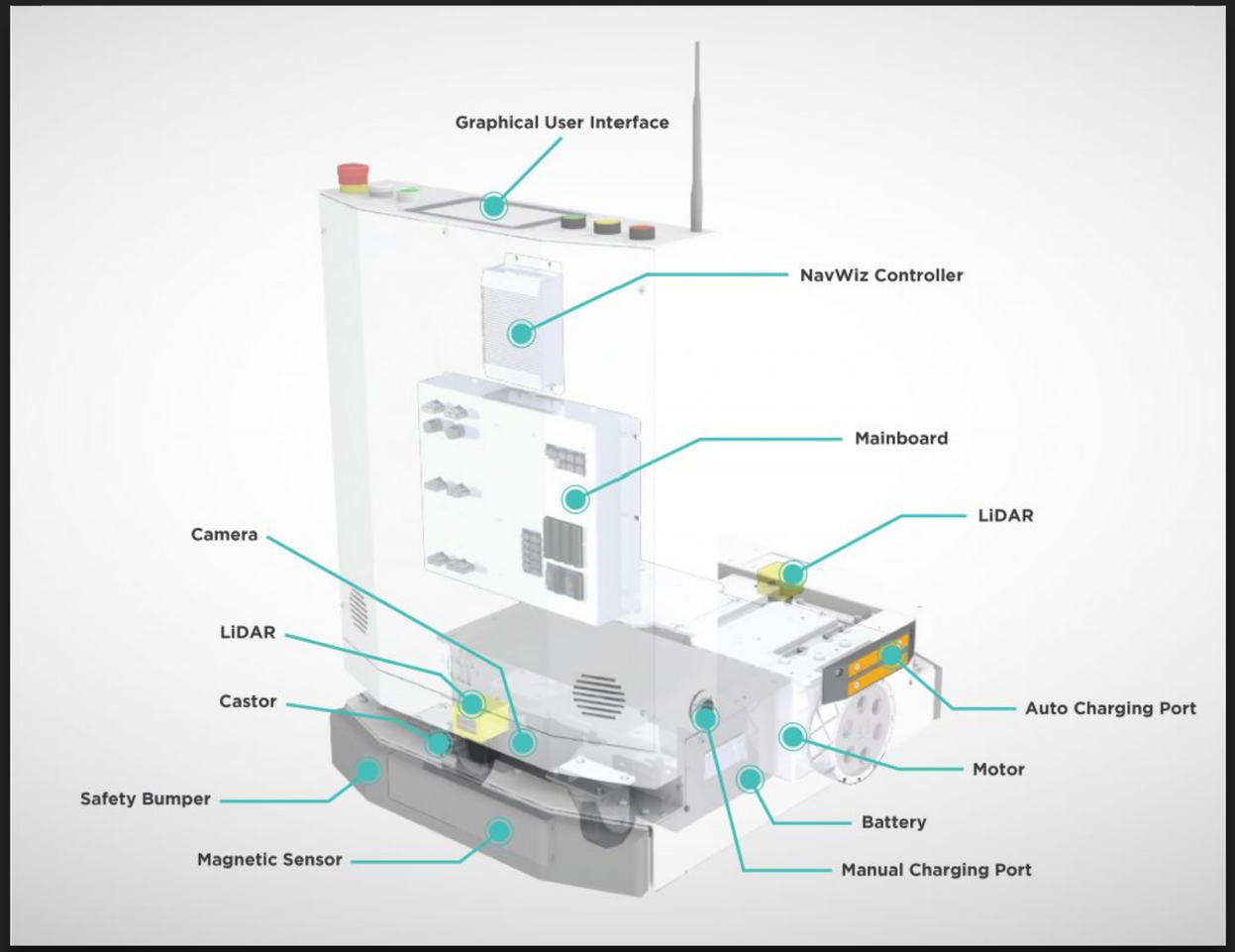

Physical Design

Here we can see the whole components of the physical design of most of the AGV robots

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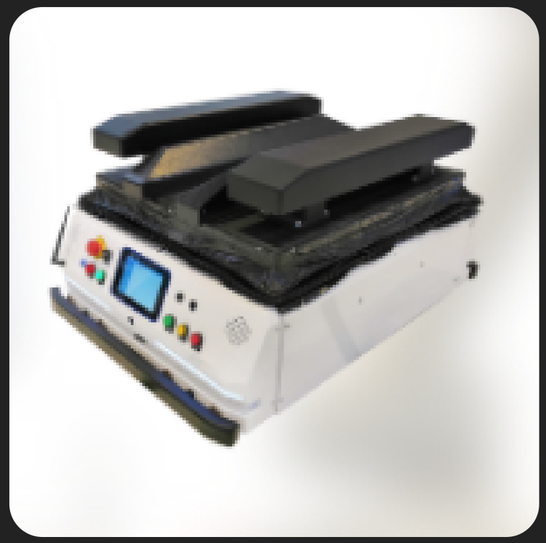
More Designs



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PROPULSION SYSTEM

Wheel Drive Systems for Automated Guided Vehicles require efficient, durable, high torque DC brush or brushless gearmotors to achieve the long-term performance and reliability that users expect. The ElectroCraft MP, MPP or MPS series right-angle gearmotors are specifically designed for this demanding market segment. Over 1 million ElectroCraft mobility gearmotors are in service worldwide delivering the smooth, controlled power with the high starting torque that mobile platforms require.

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Motors and Drives for Automated Guided Vehicles (AGV)

06

Drives

Brushless DC Motors

Integrated Motor Drives

PMDC Brush Motors

Gearmotors

Cable / Harness Solutions

Navigation System (Sensors) & Control

AGV requires a navigation system that provides the ability for the vehicle to identify its position. Most common ones are GPS based algorithm and a line following algorithm. but here we are going to see some modern systems for navigation in industries.

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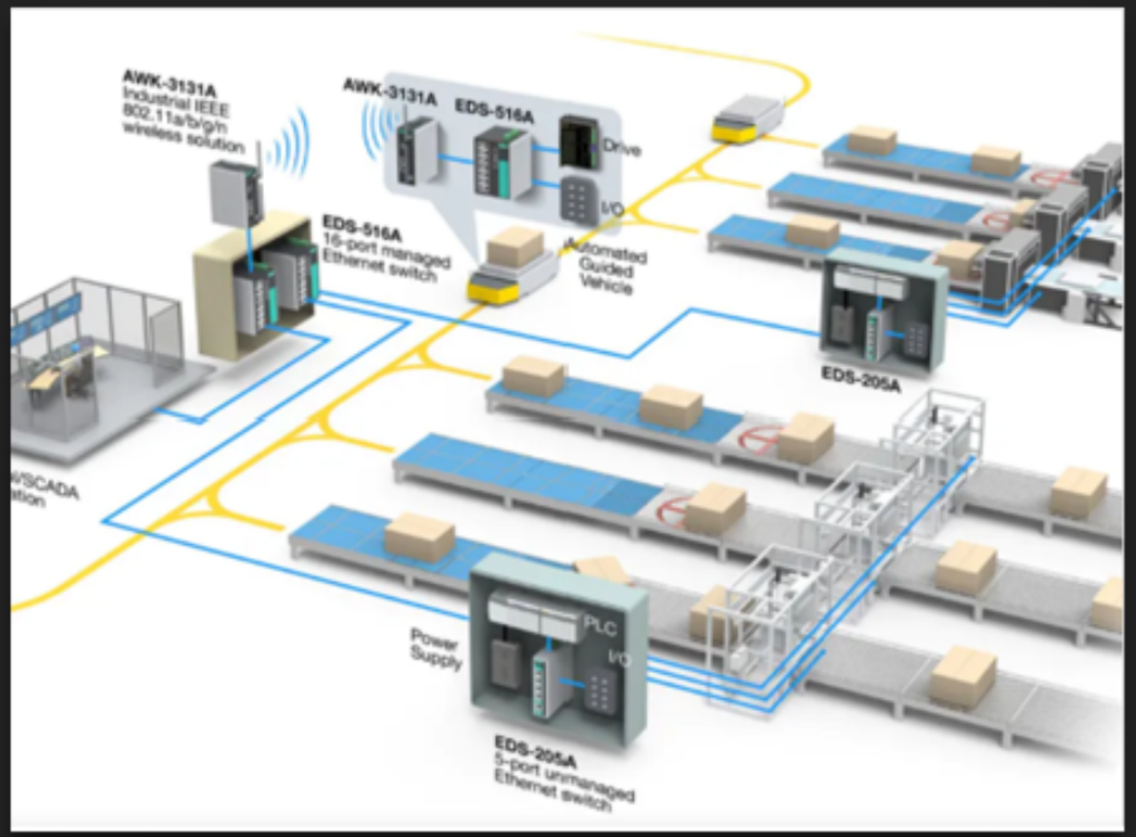

Computer Vision-Based Navigation System

An alternative system that detects boundary lines and intersections information can be achieved using machine vision based navigation systems.

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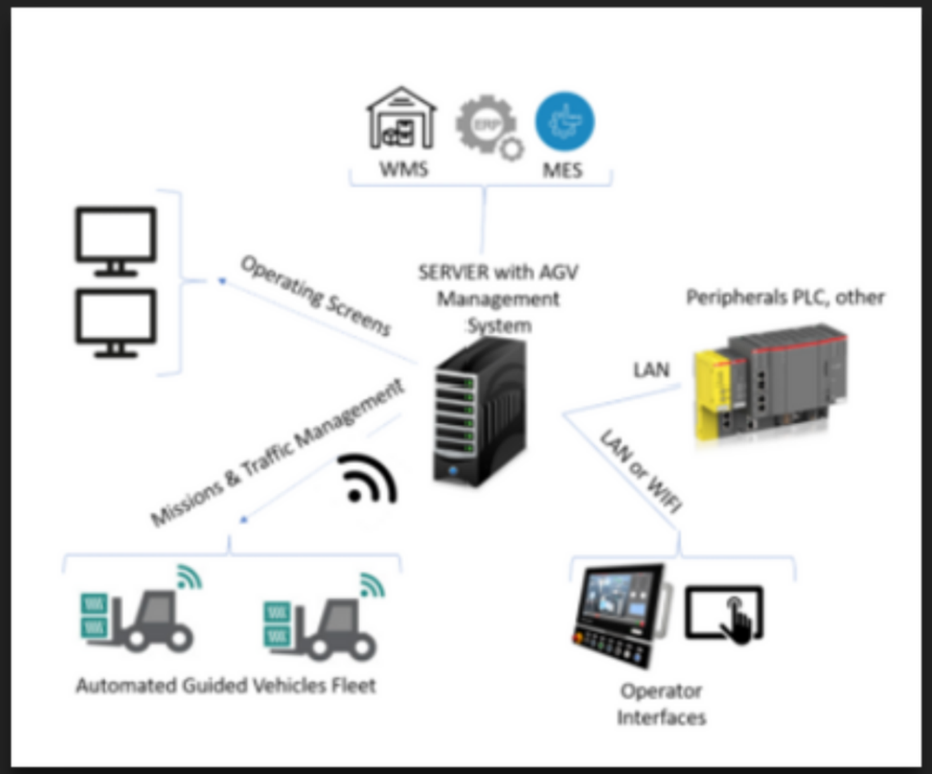

AGV Management System

mostly using bluetooth system with connection to a server

DATA TRANSMISSION AND COLLECTION

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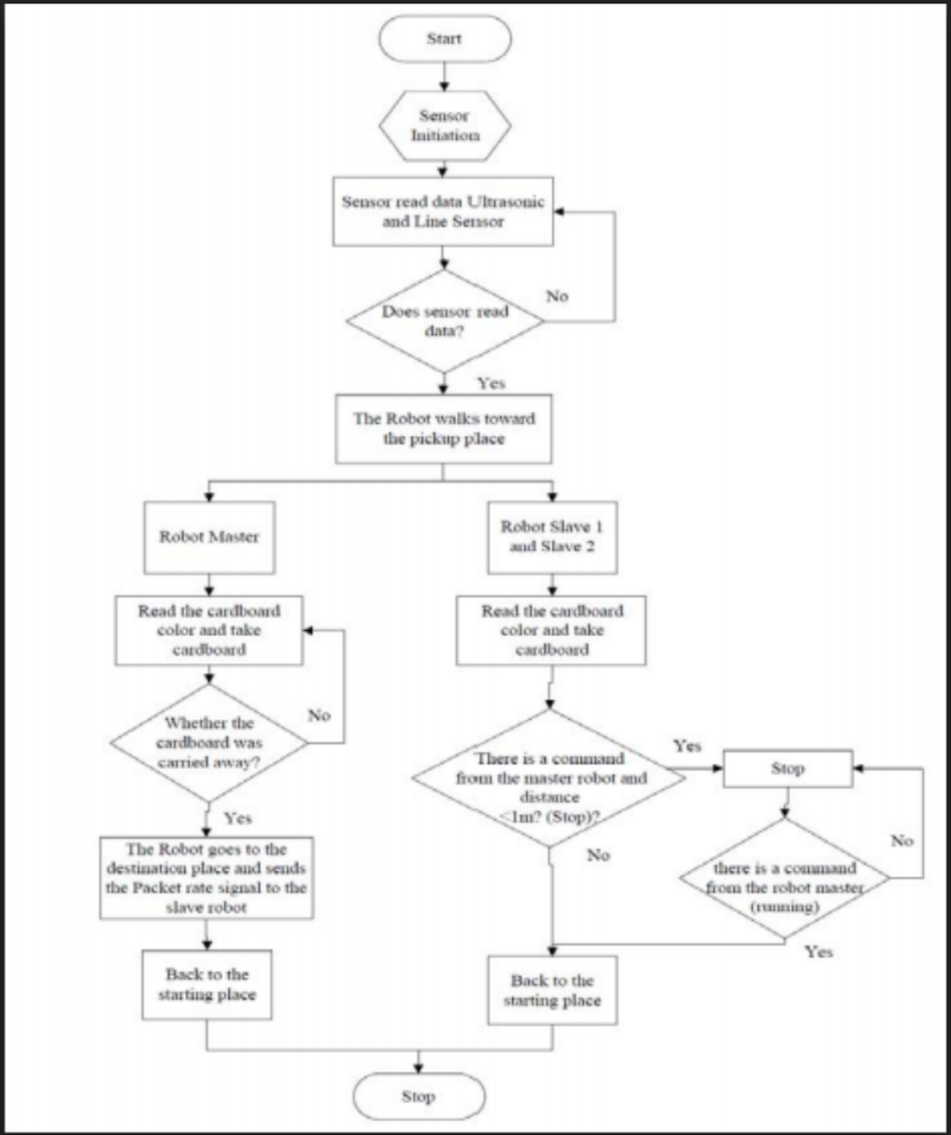
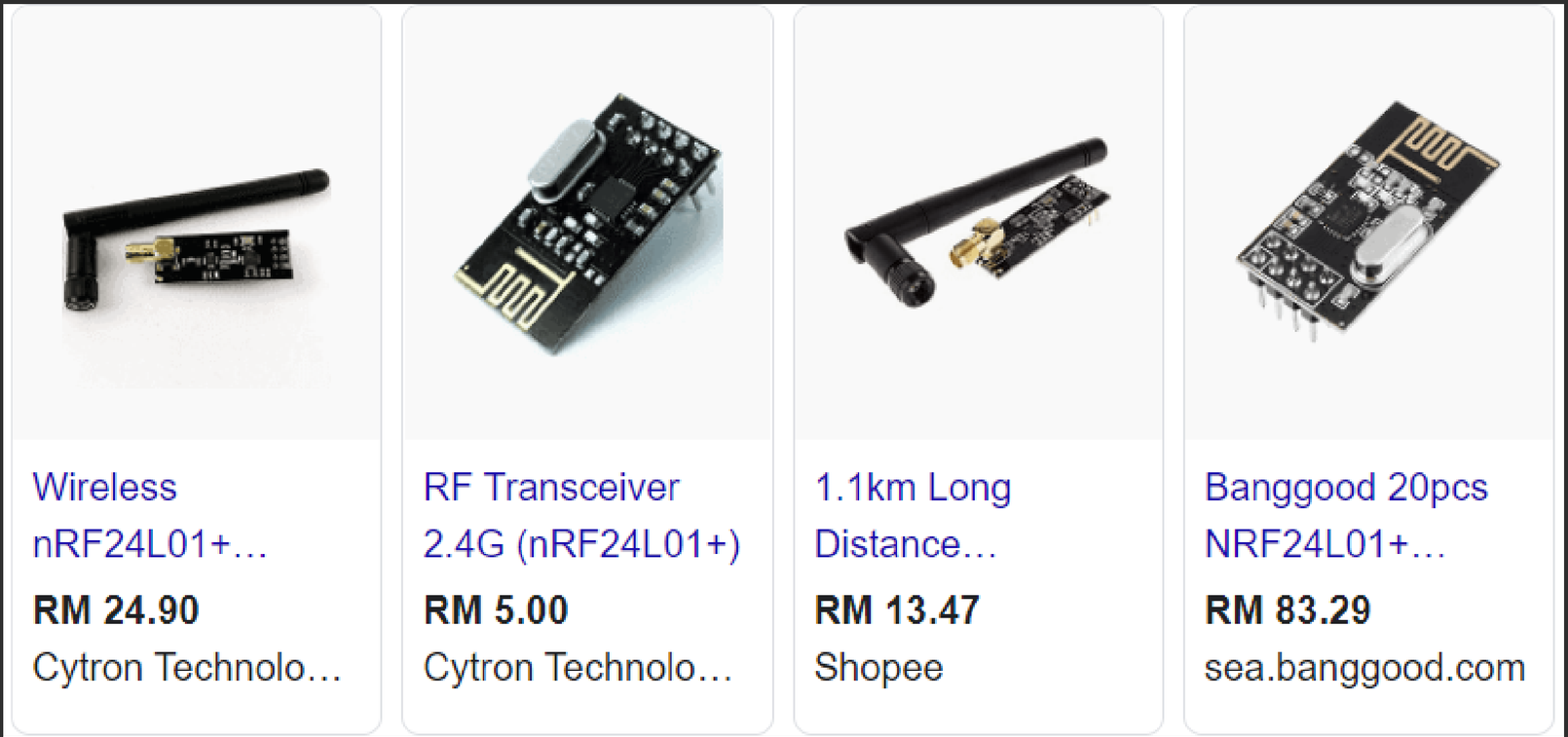


The picture above shows the system design of robot movement Automated Guided Vehicle (AGV) Master and Slave from the beginning to the end position. The system is continuous so when the robot has reached the destination, it is re-positioned again. Here the sensor is used to help the robot to be able to run well on its track and deliver the goods in accordance with the specified color, and the line sensor is used as a marker of the destination point of the robot and as a counter. Here the robot will start running when the goods have been received by the sensor, once it is read, the robot will walk to the location addressed by bringing goods according to color and send the RSSI signal to the slave robot, and then the slave robot will stop. The master robot and the slave robot will return to the original position when the task is fulfilled.



automatic vehicle to vehicle communication and vehicle to infrastructure communication using nRF24L01 module

Power Management

Roboteq’s BMS10x0 is a battery management and protection system for building cost-effective, customizable, ultra-efficient and high current power sources using all Lithium Ion chemistry batteries. Roboteq’s BMS10x0 is a Centralized System for 6 to 15 cell Battery Packs and incorporates versatile, configurable system and cell parameters.

https://acim.nidec.com/motors/motion-control/products/agv-power-management

A Complete, Centralized Battery Management System