Inventory Management System for Retailers

LITERATURE SURVEY

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1) Hybrid algorithm based on reinforcement learning for smart inventory management

Journal: Journal of Intelligent Manufacturing (2022)

Date: 03 August 2022

Authors: Carlos Cuartas & Jose Aguilar

Abstract:

This article proposes a hybrid algorithm based on reinforcement learning and the inventory management methodology called DDMRP (Demand Driven Material Requirement Planning) to determine the optimal time to buy a certain product, and how much quantity should be requested. For this, the inventory management problem is formulated as a Markov Decision Process where the environment with which the system interacts is designed from the concepts raised in the DDMRP methodology, and through the reinforcement learning algorithm—specifically, Q-Learning. The optimal policy is determined for making decisions about when and how much to buy. To determine the optimal policy, three approaches are proposed for the reward function: the first one is based on inventory levels; the second is an optimization function based on the distance of the inventory to its optimal level, and the third is a shaping function

based on levels and distances to the optimal inventory. The results show that the proposed algorithm has promising results in scenarios with different characteristics, performing adequately in difficult case studies, with a diversity of situations such as scenarios with discontinuous or continuous demand, seasonal and non-seasonal behaviour, and with high demand peaks, among others.

2) Research and Design of the Intelligent Inventory Management System Based on RFID

Published in: 2013 Sixth International Symposium on Computational Intelligence and Design

Date: 28-29 October 2013

Authors: Xiaojun Jing; Peng Tang

Abstract:

This paper introduces the characteristics and basic application of RFID technology, analyses the data flow of intelligent inventory system from the perspective of business and function, then puts forward the specific framework programs and function modules of intelligent inventory management system based on IOT RFID technology, focuses on elaborating the design and implementation process of the intelligent inventory system. The system realizes full control and management of all products, faster in/out warehouse and dynamic inventory, utilizes warehouse efficiently and improves the capacity of warehouse by effective combining with the ERP system in enterprise.

3) **Smart Inventory Management System for Photovoltaic-Powered Freezer Using Wireless Sensor Network**

Published in: International Journal of Emerging Trends in Engineering Research (2019) 393-397

Date: 4 Nov 2019

Authors : Janus Jade A. Basa, Patrick Lourenz G. Cu, Nathaniel N. Malabag, Luigi Angelo V. Naag, Dan Frederico P. Abacco, Mar Jun M. Siquihod, Gilfred Allen Madrigal, Lean Karlo S. Tolentino

Abstract :

An inventory management system for the freezer powered by photovoltaic panels was developed in this study. It aims to promote energy efficiency and the responsible use of food. Its sensor network is an Arduino-based wireless network of sensors on a solar-powered freezer that is used to develop a smart inventory management system that is accessible and is easy to use. By having network of sensors implemented inside the freezer, the inventory of perishable and non-perishable items can easily be monitored without having to physically check the inside of the freezer. In connection with this, a complemental Android application was developed that would receive and display the data sent from the sensor network through GSM Shield SIM800L.

4) STUDY OF SMART INVENTORY MANAGEMENT SYSTEM BASED ON THE INTERNET OF THINGS (IOT)

Published in: VOL. 3 NO. 3 (2019): INTERNATIONAL JOURNAL ON RECENT TRENDS IN BUSINESS AND TOURISM

Date: July 2019

Authors: Souvik Paul ,Atrayee Chatterjee ,Digbijay Guha

Abstract:

In developing enterprises and the constant demands of the product diversity, traditional Inventory Management model can't achieve that, due to its heavy workload and low efficiency. This paper presents a new type of intelligent Inventory Management System based on the IoT and explains the principles and structure of it. This system has great advantages compared to the traditional mode, and we expect good prospects for its development. Inventory Management is a key area for customer service and cost optimization in any manufacturing setup. As companies turn global and have thousands of components and hundreds of warehouses the inventory becomes a nightmare and a lot of time is spend in tracking inventory and ensuring right shipments. Traditional systems of robotic arms for inventory pick and drop have been based on premises of marking areas of the warehouse and tracking it.