

# 基於工業物聯網技術的智能機器化倉庫管理系統 Industrial IoT-based Smart Robotic Warehouse Management System

## 提升倉庫揀選及補貨工序的智能機器化倉庫管理方案

A smart robotic warehouse solution that refines warehouse picking and replenishment operations

專利申請編號: 18111830.1 (香港)

### 特色與優點

- 從「人到貨」操作變為「貨到人」操作
- 機械人路線最佳化及避免碰撞
- 群體機械人控制
- 貨架存放位置最佳化

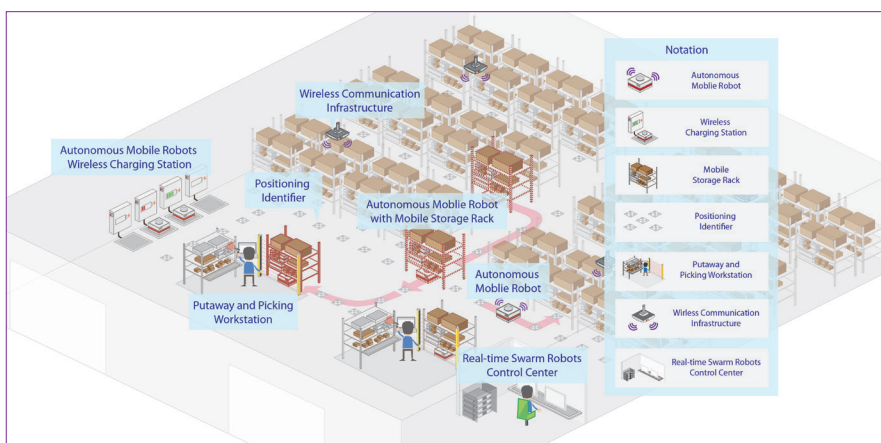
### 應用

- 智能倉庫
- 配送中心
- 電子商務行業
- 快遞行業

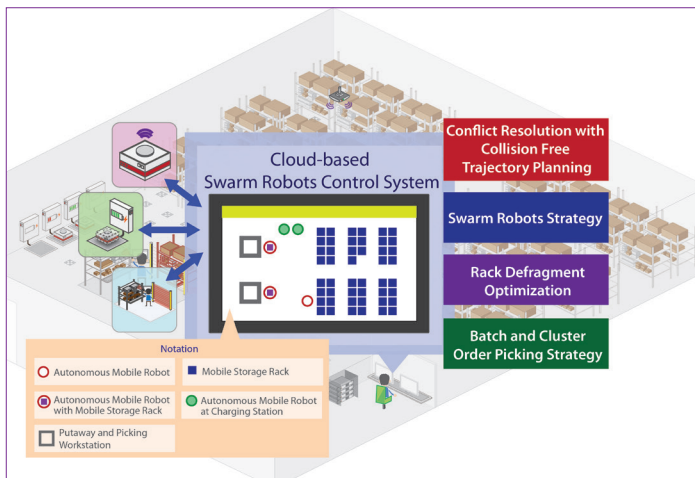
### 獎項

- 2019香港工商業獎:設備及機械設計獎 (2019年12月)
- 香港零售科技創新大獎2019: 最受傳媒歡迎創新大獎 (2019年9月)
- 第47屆瑞士日內瓦國際發明展 - 銀獎 (2019年4月)
- 亞洲國際創新發明大獎 - 金獎 (2018年12月)
- 亞洲國際創新發明大獎 - 傑出自動化發明大獎 (2018年12月)

工業4.0 帶動自主機械人、工業物聯網、雲端運算等新興技術迅速發展，工業逐步趨向利用高技術運作的發展模式。理大與業界合作研發一套基於工業物聯網技術的智能機器化倉庫管理系統，對倉庫揀選和補貨的工序作重新定義，以實現智能倉儲的理念。系統配合自主移動機械人，將貨物的揀選和補貨操作自動化，以優化倉庫空間及人力資源，從而提高倉庫運作效率。



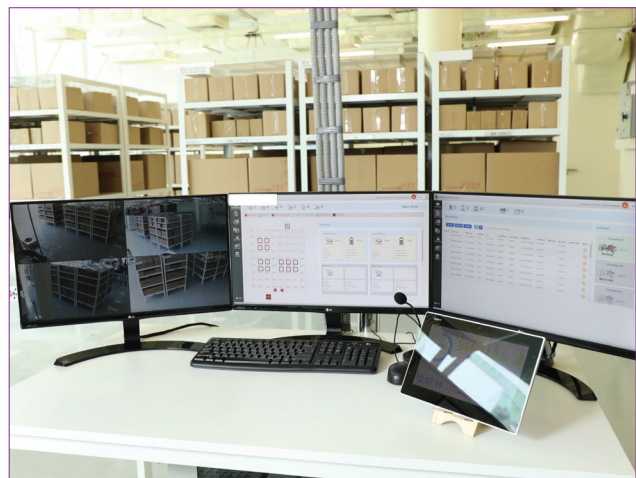
基於工業物聯網技術的智能機器化倉庫管理系統概念圖  
Conceptual diagram of the IIoT based Smart Robotic Warehouse Management System



基於雲端運算技術的群體機械人控制系統  
Cloud-based swarm robots control system



機械人搬運貨架情況  
Demonstration of the robot operation



智能機器化倉庫管理系統控制中心  
Control centre of Smart Robotic Warehouse Management System

Patent Application No.: 18111830.1 (Hong Kong)

In response to the advent of emerging Industry 4.0 technologies such as autonomous robots, Industrial Internet of Things (IIoT), cloud computing, PolyU collaborates with industrial partner to develop an IIoT-based Smart Robotic Warehouse Management System for implementing the concept of smart warehousing. The project redefined warehouse picking and replenishment operations from man-to-goods to goods-to-man using autonomous mobile robots. It is believed that the implementation of this system can change the logistics operations from labour intensive procedures to automation. It also provides solutions for better floor space utilization, labour utilization, and operational efficiency in warehousing.

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### Special Features and Advantages

- From “man-to-goods” to “goods-to-man”
- Routing optimization and collision avoidance
- Swarm robots strategy
- Re-slotting Optimization

### Applications

- Smart warehouses
- Distribution centres
- E-commerce industry
- Express delivery industry

### Awards

- Equipment and Machinery Design Award - in 2019 Hong Kong Awards for Industries (HKAI) (Dec 2019)
- Media Choice Innovation Award - Hong Kong Retail Innovation Award 2019 (Sep 2019)
- Silver Medal – 47th International Exhibition of Inventions of Geneva, Switzerland (Apr 2019)
- Asia International Innovative Invention Award – Gold Award (Dec 2018)
- Asia International Innovative Invention Award – Outstanding Automation Award (Dec 2018)



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