雙臂自主移動機器人平台

計畫主持人

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執行單位

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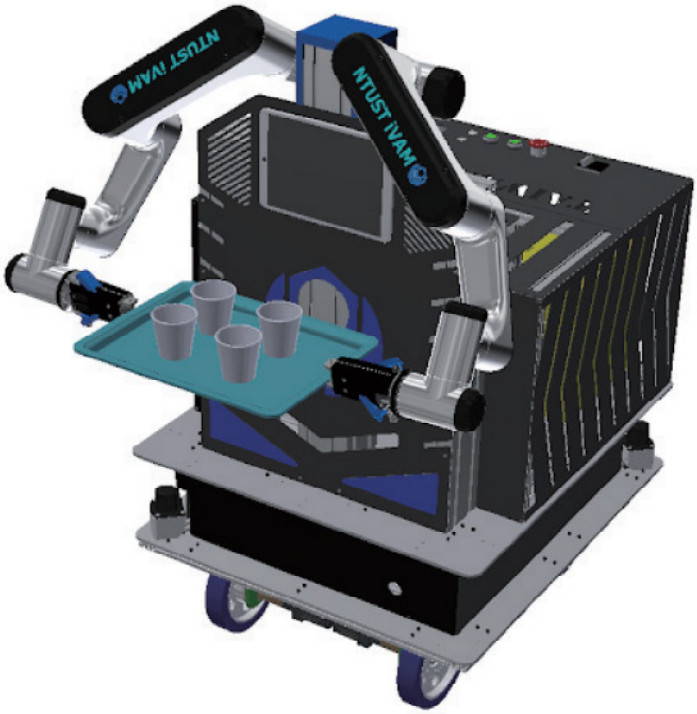
計畫簡述

此一展示呈現台科大工業4.0中心所自主研發之雙手臂自主移動機器人，其包括一組共12個自由度之雙UR型式機器手臂結構，並搭配夾爪進行取物；移動平台採四舵輪驅動，可於狹小空間進行全方向敏捷移動。此平台整合LiDar SLAM建地圖、定位技術，並達成自主導航及避障之能力；另結合人工智慧視覺辨識，進行人臉辨識、自主取物等動態展示。



計劃亮點

1. 四舵輪移動平台自主定位、導航及避障。
2. 雙手臂機器人互動。
3. AI人臉辨識與人機互動。

展品規格

1. 整體重量：120KG。
2. 外觀尺寸：130CM*85CM(含雙臂)。
3. 機器手臂自由度：12軸。
4. 機器手臂負載能力：4公斤。
5. 機器手臂定位重現精度：±0.2mm。
6. 自主移動平台定位重現精度：1公分。

產業應用

可於醫院送病歷、於服務業送餐、展演需求展示、於工廠生產線組裝。

聯絡窗口

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MOST 科技部
Ministry of Science and Technology
科技部智慧機械創新館

Dual-Arm Autonomous Mobile Robot Platform

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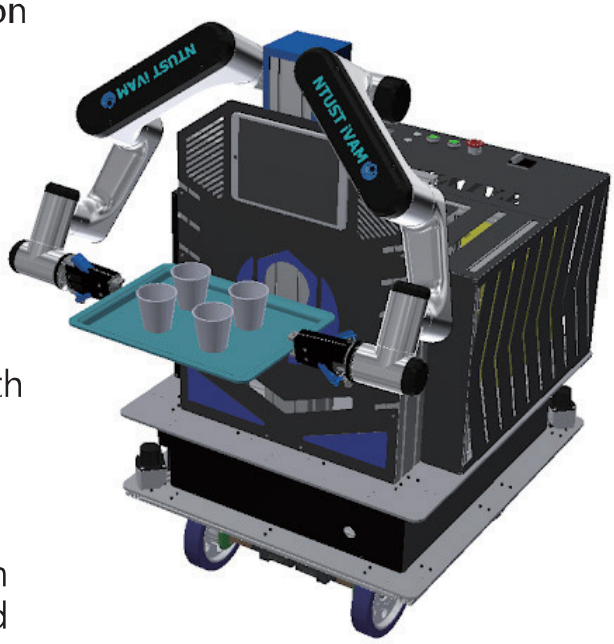
Introduction

This project demonstrates a dual-arm autonomous mobile robot which is designed and produced by Taiwan Tech Industry 4.0 Center at NTUST. This robot system is composed of two UR-type manipulators and a four-steering-wheel platform. By utilizing grippers, the dual-arm robot is able to grasp objects. In addition, the four-steering-wheel platform is capable of moving in an omni-directional manner in a crowded space. Moreover, the LiDar-based SALM techniques are performed to achieve the localization and map construction for further autonomous navigation and obstacle avoidance. Finally, the artificial intelligence is utilized to perform face recognition, object detection and object grasping for robot-human-interaction demonstration.

Highlights

1. Four-steering-wheel mobile platform for autonomous navigation and avoid-obstacle
2. Dual-arm mobile robot for object grasping
3. Face recognition and human-robot interaction



Specification

1. Total Weight: 120KG
2. Size: 130CM*85CM (including dual-arm)
3. Degrees of freedom: 12axes
4. Payload: 4kg for each self-made UR type arm
5. UR-type robot repeatability: ±0.2mm
6. Mobile platform positioning repeatability with LiDar-based SLAM: ±1cm

Industrial Applications

It can be used in the following applications, such as hospital for medical records delivery, food delivery in restaurant, exhibition show, and assembly at the factory production line.

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