Kettybot & Holabot mobile robots

Automating internal logistics flows

System description

Kettybot & Holabot mobile robots automate the movement of materials, components and finished products in industrial workshops, service areas...

They respond to calls operators or production machines with special needs. bring in or send parts.

The list of jobs assigned to the robotx can be accessed and modified by the supervisor at any time.

Kettybot & Holabot embody the very best in mobile robotics technology:

- ✓ 3D RGBD camera for obstacle avoidance
- ✓ Infrared positioning camera (V-SLAM)
- ✓ Laser radar (Lidar) for mapping and positioning SLAM
- ✓ Voice recognition
- ✓ Suspensions to reduce effect of bumps and holes
- ✓ 18.5" screen for message display (Kettybot only) The SLAM multi-sensor fusion algorithm from PUDU Robotics integrates data from Lidar, cameras, encoders, an IMU (Inertia Measurement Unit...).

Finally, the intelligent route-planning algorithm calculates the optimum route to carry out the tasks according to the operating environment.

This system is designed in the spirit of **the Industry of the Future** (Industry 4.0) and meets the main requirements on intelligence and the evolution of production methods:

- ✓ **Scalability & Flexibility** with the ability to redefine and modify internal logistics flows at any time
- ✓ **Collaborative mobile robotics**

This system can be used as a stand-alone system to manage the flow of parts.

It can also be integrated into **ErmaSmart, Ermaflex and ErmaLean** flexible production lines, as well the **Dynamic Vertical Warehouse** (VL10).

This product is accompanied a technical and educational dossier in digital format.

Touch panel for interact with the robot and plan the tasks to be carried out

Highlights

- Genuine **industrial system** with **modern robotic technologies**
- **Easy programming of mobile and collaborative robots. You can create maps and routes in real time, directly on the robot.**
- Introduction to **production logistics flows** and **their optimization**
- System can be used in **robotics**, **industrial maintenance and automated production** training courses
- Can be integrated with ErmaSmart, Ermaflex and ErmaLean flexible production lines.

CAP CIP - Bac PRO PLP / MELEC / MSPC
BTS CRSA / Electrical engineering /
MS IUT - Universities - Engineering

Main themes Industrial
Maintenance Production
Management
Design of multi-technology systems in electrical engineering, automation and robotics

Themes "Industry 4.0

- Scalability & Flexibility
- Personalization
- Simplified programming
- Digital twin
- Mobile robotics
- Collaborative robotics
- Efficient actuators
- CAPM & CMMS
- Digital instructions & MES
- Quality control "online
- Vision & Smart Sensors
- IOT & Communications
- Big Data, AI & Predictive Maintenance
- Augmented reality
- Virtual reality
- Additive manufacturing for tooling...

KettyBot mobile robot

Automation of internal logistics flows

KettyBot mobile robot

The KettyBot mobile robot consists :

- ✓ Two shelves for carrying up to 30kg
- ✓ An automatic recharging system: KettyBot automatically issues a voice alert and a notification in the user interface when the battery is low, and simultaneously returns to the docking station (optional).
- ✓ Two 3D RGBD depth cameras for obstacle avoidance
- ✓ An infrared positioning camera (V-SLAM)
- ✓ A laser radar (Lidar) for SLAM mapping and positioning
- ✓ Voice recognition solution
- ✓ Suspensions to reduce effect of bumps and holes
- ✓ IoT system (PuduIoTest system) capable of communicating operating data in real time and upgrading robot software remotely.
- ✓ High-power loudspeaker
- ✓ 18.5-inch screen. Depending on your needs, you can generate a playlist indicating the duration, frequency and playback order of the information to be broadcast, then publish it on the robot.
- ✓ A second touch screen for communicating with your contacts.

Automatic charging station

Features of the KettyBot mobile robot The main features are :

- ✓ Robot dimensions: 451x436x1103 mm
- ✓ Weight: 38kg
- ✓ Load capacity: 30kg
- ✓ Autonomy: Over 8 hours
- ✓ Charging time: 4 hours and 30 minutes (automatic recharging)
- ✓ Safety travel speed: 1.2 m/s (modifiable)
- ✓ Minimum travel width: 55 cm
- ✓ Information screen diagonal: 18.5 inches
- ✓ Communication: Wifi / USB / Ethernet

References

PU//KBGYBG-1P : Kettybot reception and delivery robot from Pudu Robotics
PU//KettyChargingStation: Automatic charging station for the Kettybot robot

HolaBot mobile robot

Automation of internal logistics flows

HolaBot mobile robot

HolaBot is the first multi-scenario collection robot that innovates by applying its autonomy in the food, office, healthcare, industrial and other sectors.

HolaBot offers 60kg carrying capacity, 120L volume

HolaBot can boost the efficiency of turnaround times, by enabling:

- ✓ high-volume handling
- ✓ high transport capacity
- ✓ Pager functions
- ✓ gesture recognition and voice control module

HolaBot's voice recognition is provided by a system of 6 omnidirectional microphones which locate the sound source in real time, enabling the robot to maneuver intelligently accordingly.

The HolaBot mobile robot consists of:

- ✓ Four shelves to carry up to 60kg
- ✓ Three 3D RGBD depth cameras for obstacle avoidance
- ✓ An infrared positioning camera (V-SLAM)
- ✓ A laser radar (Lidar) for SLAM mapping and positioning
- ✓ Voice recognition solution
- ✓ Suspensions to reduce effect of bumps and holes
- ✓ IoT system (PuduloTest system) capable of communicating operating data in real time and upgrading robot software remotely.

Warehouse application

A color touchscreen interface on the top of the unit

Features of the HolaBot mobile robot

The main features are :

- ✓ Robot dimensions: 541 x 531 x 1226 mm
- ✓ Weight: 60 kg
- ✓ Machine material: ABS / Aviation-grade aluminum
- ✓ Water resistance: IP5X
- ✓ Charging time: 4.5 h
- ✓ Battery life: 10 to 24 h (exchangeable power supply)
- ✓ Battery capacity: 25.6Ah
- ✓ Cruising speed: 0.5 to 1.2 m/s, adjustable
- ✓ 4 trays with 15kg capacity and 475mm×400mm dimensions (total capacity: 60kg)
- ✓ Standard tray heights: 228mm / 198mm / 198mm / 190mm
- ✓ Color touchscreen
- ✓ Pager function for calling and tasks at any time (5 watches supplied with 1.3" TFT LCD display)
- ✓ LoRa communication system (ad-hoc network) with Pagers
- ✓ Communication: Wifi / USB / Ethernet / LoRa

References

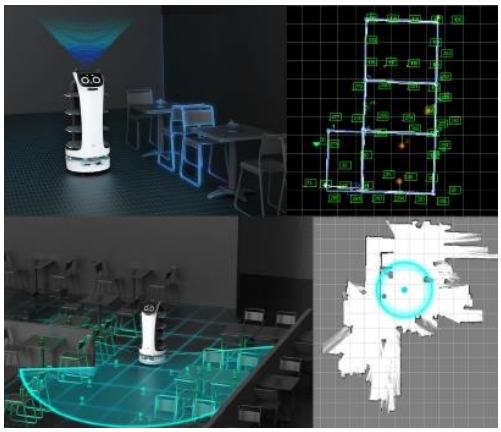
PUDU Holabot: Holabot delivery robot from Pudu Robotics

Outstanding detection capabilities

- ✓ 3 3D Realsense RGBD visual perception cameras
- ✓ Precise obstacle detection and stop in 0.5 seconds
- ✓ Extra-wide front detection angle: 192°.
- ✓ Obstacle detection up to 10m
- ✓ Detection obstacles with a minimum height of 2cm
- ✓ 5400 obstacle operations per minute

PUDU programming interface

For Kettybot and Holabot



PUDU SLAM

- ✓ PUDU SLAM is a SLAM solution that integrates Lidar, camera, RGBD and IMU, encoder and other sensors.
- ✓ High positioning accuracy (10cm) enables the robot to efficiently recognize and avoid 3D obstacles.
- ✓ Initial mapping is particularly simple

PUDU IoT

PuduloT can count "production" data in real timemonitor robot operation and remotely update software...

PUDU Cloud

- ✓ Cloud-based intelligent services platform
- ✓ Scenario-based data collection platform
- ✓ Automated operation and maintenance platform
- ✓ Activity management platform: Each robot's delivery data is uploaded in real time, enabling data-driven management of robot actions.

Executing and modifying missions

- ✓ Ability to create multiple missions and classify them by type and location
- ✓ All missions can be modified. press the stylus symbol and add or modify actions.
- ✓ Execute the tasks you want to perform at the touch of a button
- ✓ View all current and upcoming missions
- ✓ Reorganization of the order in assignments are carried out, or even abandonment of current or future assignments

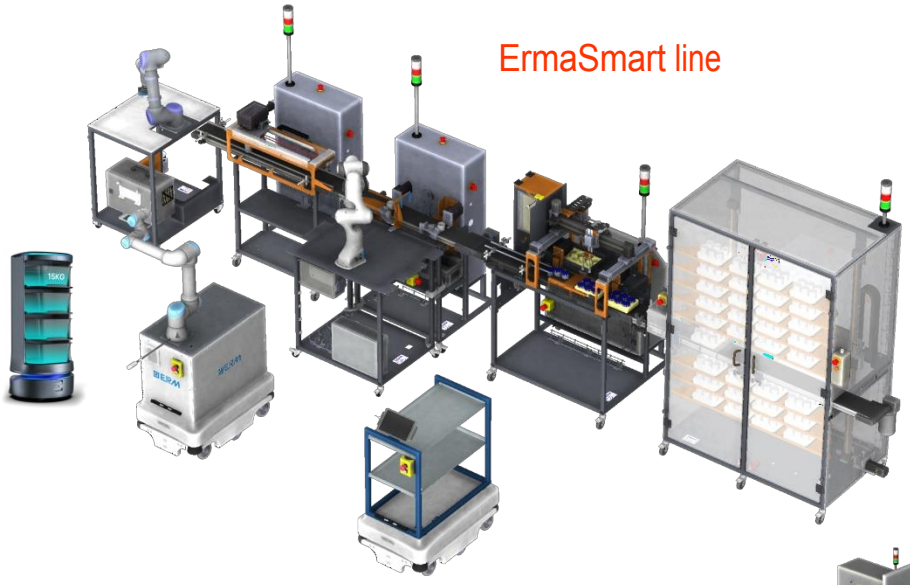
Educational activities

- ✓ **Automation & Robotics**
  - **Functional** and **structural** system **analysis**
  - SLAM mapping
  - **Robot programming with intuitive, dedicated software**
  - **Scheduling travel missions**
  - Mobile robotics safety and risk analysis
- ✓ **Production control**
  - Use a mobile robot to transfer parts between two production stations
- ✓ **Industrial maintenance**
  - **Preventive maintenance**
  - Enhanced **maintenance** (adapting trays to the type of parts to be transported, etc.)

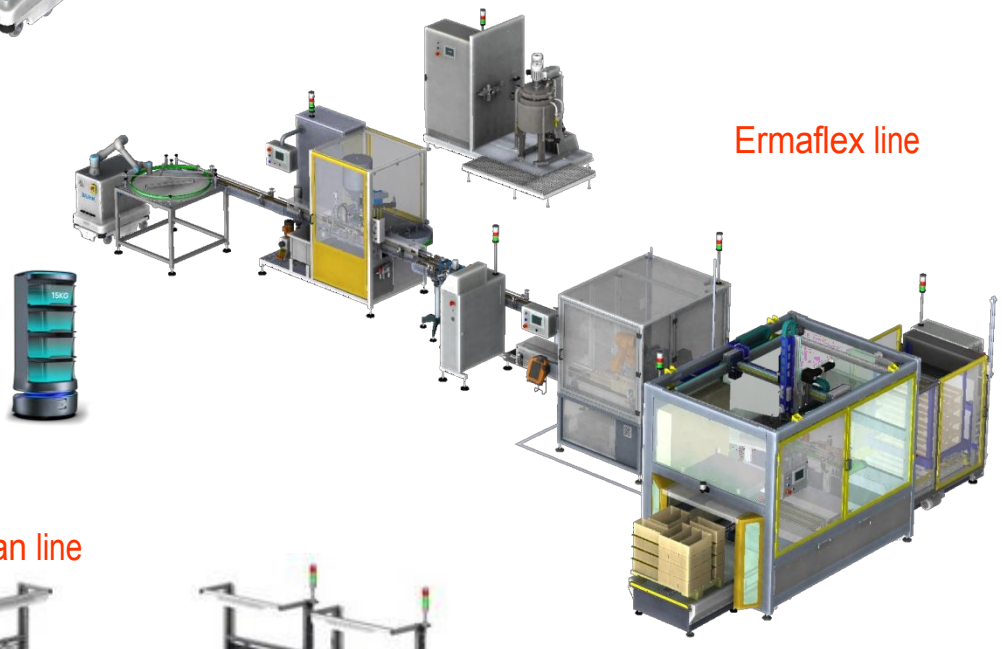
Integration with ErmaSmart, ErmaFlex & ErmaLean lines

In the proposed scenarios, the mobile robot is tasked with bringing boxes of components to an operator station on the production line, with the operator then responsible for dispatching the components to the various workstations.

ErmaSmart line



Ermaflex line



Ermalean line