

Roboception, QRS & Danfloss



Source / Link: <https://roboception.com/en/>

Technology area:

- Artificial Intelligence
- Big Data
- Digital Twins
- IoT and IIoT
- Cybersecurity
- VR/AR
- Robotics
- Automation
- System Integration
- Smart Sensors
- Additive Manufacturing
- Other

Type of good practice:

- Company
- Project
- Initiative
- Programme
- Other

Target market segments:

- Discrete (smart) manufacturing
- Automotive
- Aerospace
- Metal processing
- Consumer goods
- Pharmaceuticals and chemistry
- Food and agriculture
- Health
- Textiles
- Others

Summary:

Roboception offers innovative navigation, real-time perception and manipulation solutions for robotic systems. Customer-specific software products for a variety of hardware platforms are developed in compliance with the customer's individual plug-and-produce requirements. Roboception's innovative sensor solutions enable customers across all robotic domains to generate real-time, time and location-dependent 3D data products and to equip robotic systems with robust and seamless infrastructure-free navigation. Following the concept of "Sense. Reason. Act.", 3D technologies such as object localization, recognition and scene analysis, robotic manipulation and application development complete the portfolio. The solutions include highly intuitive, user-friendly interfaces, parametrization and programming; hence a detailed robotic knowledge is not required for their setup and operation. Munich-based Roboception GmbH was founded in March 2015 as a spin-off of the Institute of Robotics and Mechatronics of the German Aerospace Center (DLR).

In a recent project by QRS and Danfloss the challenges of object recognition was slowing down and threatening the implementation of a major automation project in Danfloss. In order to solve this challenge, QRS decided to implement the solution of Roboception - rc_visard 3D stereo sensor – in order to empower the robots to recognise more than 100 different components.

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Detailed description

At Danfoss, a Danish manufacturer of mobile hydraulics as well as electronic and electrical components, robotic systems equipped with 3D sensors now reliably and precisely recognize and move a large number of different components. In the new production line implemented by Danish integrator Quality Robot Systems (QRS), a total of six KUKA robots, takes over work steps that were previously performed manually. For this, the robotic cells must recognize and move up to 100 different components without manual intervention.

The requirement for the robotic cells at Danfoss was fully automatic feeding of the components – a task that can only be solved with a camera system, given the large number of variations. The alternative, namely feeding the blanks meticulously ordered and aligned, was simply not economically feasible. Instead, the objects arrive at the first robot station in standard roll boxes, sorted by box, but with the boxes stacked on top of each other more or less indiscriminately, and with the layers of objects separated by paper sheets.

To meet the challenges of object recognition, QRS was able to benefit from its close partnership with KUKA. For when it comes to camera systems and object recognition, KUKA turns to Munich-based partner Roboception and their rc_visard 3D stereo sensor.

At Danfoss, the rc_visard (using the SilhouetteMatch software), reliably detects the position and orientation of the flat, unordered objects on the flat paper surface and also provides the robot with the gripping points at the same time.

A 2D solution was quickly ruled out for this project, as the paper slipsheets are not always completely flat, or may be oily due to the components. In tests with other systems, the camera had sometimes misinterpreted impressions as workpieces. SilhouetteMatch, on the other hand, recognizes exactly which components are supplied to the robotic cell and reliably transmits the appropriate gripping points for a KR CYBERTECH from KUKA.

Beneficial Results

The effort was worth it in many respects. In this way, not only was the client satisfied, but the successful integration of the camera system from Roboception also ensured follow-up orders at QRS. Danfoss, too, is pleased with the solution from KUKA, Roboception and QRS. The automation not only accelerates and stabilizes the hydraulics expert's production processes, but simultaneously ensures greater safety at work for its employees.

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