KUKA Vision-Guided Picking

KUKA Systems Corporation North America
## Vision-Guided Picking

- ... if your part location is not known or you need to localize different SKUs on a source pallet or conveyor.
- ... if you need to measure case dimensions on the fly.
- ... if recognition features are difficult to learn or packaging appearance is constantly changing.

In order to recognize the position and orientation of cases on a source pallet or a conveyor two main vision recognition methods are usually applied.

If items are presented on a conveyor a 2D approach can be easily applied. In this classical approach features are extracted from a grey value image acquired with a standard CCD camera. In order to recognize an object, a set of features must be taught in before the system can work. The third information is then extracted by evaluation the size of the features (scaling information), thus these approaches are often named as 2½D.

If features are not available or are constantly changing a 3D approach provides better results. In order to obtain directly a 3D image, different hardware configurations must be applied. Typical industrial available approaches are Stereo Vision Recognition or Stereo by Motion, light cutting methods, grid projection methods 3D laser radar measuring methods.

KUKA Systems Corporation has developed together with its partner company Inos Automation Inc. a powerful vision guided picking solution, which enables you to depalletize homogenous or mixed pallets without the need to teach in any features. The 3D recognition approach is based on Sick sensors (Ruler or Ranger) and contains several heuristics to achieve a correct scene interpretation. The core element is the control software KUKA.PickControl which manages one or more robots and communicates with the vision application. If the sensor system is mounted onto a robot, **KUKA.PickControl** is synchronizing the robot’s scan movement with the image acquisition. Plausibility checks inside the vision system make sure that no false results are returned to the central control system.

### The Benefits

- Single-source solution, from planning to the world-wide after sales support
- No teach in of recognition modes required
- User friendly Human Machine Interface
- Calibration of the complete system is very easy
- Fast recognition times ensures a high throughput
- High resolution cameras supports a perfect accuracy
- Control application can be simply adapted to new requirements
THE SYSTEM CONTROLLER

The system control includes the KUKA.PickControl software of KUKA AuROrA™ application framework and is the communication and control interface to the operator and superior Warehouse Control Systems (WCS). It connects to the vision system and directs the work load to the different picking robot in the work cell. It features many support functions to simplify the commissioning process and the system diagnostics.

MAIN SYSTEM COMPONENTS

A. KUKA Robot (KR 100 PA or KR 180 PA) for picking recognized objects
B. KUKA Wing Gripper to accommodate different object sizes
C. 3D Vision System (Sick Ruler or Ranger)
D. Cell Controller with HMI, Pendant, & Safety Control
E. KUKA.PickControl Application Software with interface to superior Warehouse Control System (WCS) and vision system
F. KUKA Robot Control KRC2

VISION GUIDANCE

1. In-feed pallet conveyor
2. Vision Robot with 3D Camera
3. Picking Robots
4. Outfeed case conveyor

TECHNICAL DATA

- Picking Performance: Up to 6 picks / minute (depending on layout and packaging)
- Temperature Range: 0 - 110°F
- Maximum Case Weight: Up to 60 lbs.
- Energy Supply: 480 VAC or Local Voltage and Frequency
WOULD YOU LIKE MORE INFORMATION ABOUT HOW KUKA SYSTEMS CAN HELP YOU REDUCE YOUR COSTS, OPTIMIZE YOUR OPERATIONS, AND IMPLEMENT A FLEXIBLE SOLUTION FOR NOW AND THE FUTURE?

CONTACT US AT LOGISTICSSOLUTIONS@KUKANAO.COM OR CALL +1 586 795 2000.

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