Manipulator and Vision Systems Usage in Industrial Automation Lab

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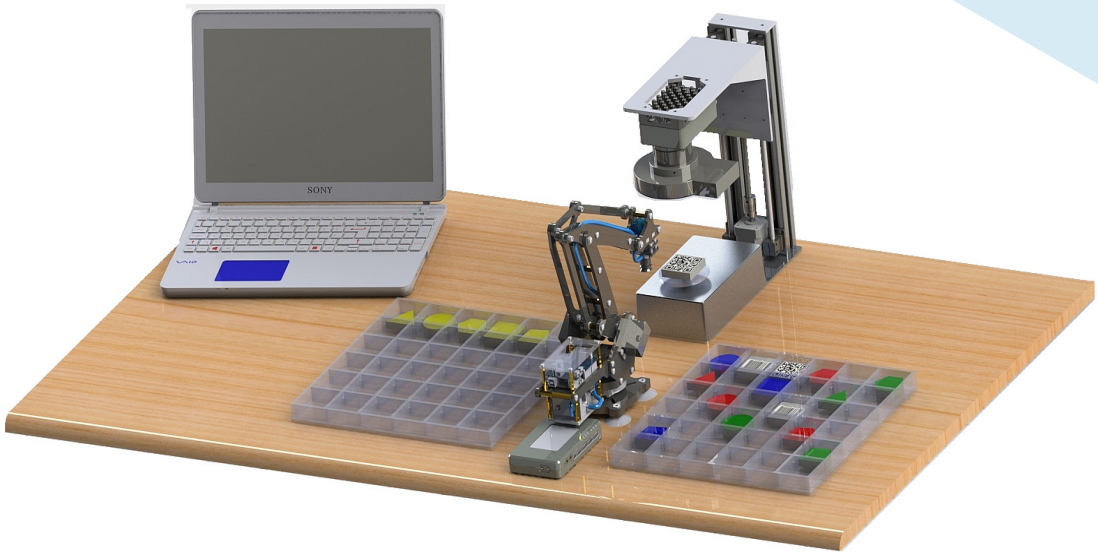

Overview

The educational lab is intended for studying the possibilities of using manipulator and vision systems in industrial automation. Manipulator with 4 degrees of freedom (DOF), color camera, illuminator and a digital weigh scale are used in the lab. The hands-on works allows the students to learn the basics of automatic identification, sorting and rejection using manipulator and machine vision by the following parameters:

- Weight
- Color
- Dimensions
- Shape
- Barcode
- QR-code
- Digital marking

The lab stand also allows the students to identify the resistance value by color bars on a special detail made in form of resistor.

By means of the lab stand students can realize automatic focusing of the camera and control the brightness and spectrum of the illuminator to achieve the maximum recognition.

Hands-on Works

1. Control of the manipulator.
2. Programming of the manipulator.
3. Sorting of the items by weight.
4. Sorting, identification and rejection of the items by color.
5. Sorting, identification and rejection of the items by dimensions.
6. Sorting of the items by barcode and QR-code.
7. Sorting of the items by digital markings and color bars.
8. Identification and rejection of the items by form.
9. Automatic focusing execution of the camera.
10. Control of brightness and spectrum of the illuminator.

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