Bin Picking – 3D Vision Guided Robotics

3D vision system based on stereoscopic systems in cooperation to increase the redundancy of the coordinate acquisition and the orientation determination. To capture the data, characteristic points of an object are used to transfer these 3D object information to a robotized production line, VGR (Vision Guided Robotics), which then processes the objects and thus automates the production process. These tasks can ultimately be done with a robot or with multiple robots that manage themselves between them.

Robotic systems with image processing (Vision Guided Robotics) can be used in many ways, because the image processing allows to determine very precisely the position of an infinite number of objects in the space, furthermore the point of interest of the object in the 3D space can be defined and so the access Point for the robot. This quality of the combination of 3D technology and a robot system allows a technique called Bin Picking.

Through the use of image processing systems, e.g. Stereoscopic systems, time-of-flight cameras, 3D laser triangulation, or many other 3D techniques, a 3D point cloud can be created and thanks to specific libraries, these 3D point clouds can be programmatically processed with algorithms to capture the object (this requires Accurate three-dimensional information of the object in the form of 3D models of the type stl or dxf).

With the algorithm and the loaded model, we are able to recognize the objects, even if they are randomly stacked (chaotic)

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