Bin Picking – 3D Vision Guided Robotics

Robotic systems with image processing (**VGR 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.

VGR systems provide a greater degree of freedom to robotics, eliminating the obligation to work in predefined environments. When a robot works without an associated vision system, the working environment must be fixed, the robot must always access a predetermined position. Robotic Vision Assisted (VGR) systems are much more flexible.

The software developed by **Ines Optics** allows to determine with extreme precision the position and orientation of any object in the space, and in this way, to accurately direct the robot to the coordinates of the space XYZ and optimal orientation angles for the manipulation.

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).

This type of guiding systems can be used in industrial welding, painting, assembly, palletizing and parts handling applications.

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