Segmentation and location computation of bin objects

In this paper we present a stereo vision based system for segmentation and location computation of partially occluded objects in bin picking environments. Algorithms to segment partially occluded objects and to find the object location [midpoint,x, y and z co-ordinates] with respect to the bin area are proposed. The z co-ordinate is computed using stereo images and neural networks. The proposed algorithms is tested using two neural network architectures namely the Radial Basis Function nets and Simple Feedforward nets. The training results fo feedforward nets are found to be more suitable for the current application.The proposed stereo vision system is interfaced with an Adept SCARA Robot to perform bin picking operations. The vision system is found to be effective for partially occluded objects, in the absence of albedo effects. The results are validated through real time bin picking experiments on the Adept Robot.