

## STEREO VISION SYSTEM FOR A BIN PICKING ADEPT ROBOT

### **Abstract:**

In bin picking applications, robots are required to pick up an object from a pile of stacked or scattered objects placed in a bin. To perform such tasks, identification of the objects to be picked using a vision system is indispensable. In this paper, a stereo vision based automated bin picking system is proposed which identifies the topmost object from a pile of occluded objects and computes its location. The proposed bin picking process consists of two modules namely object segmentation module and object localization module. In the segmentation module, an 'Acclimatized Top Object Threshold' [ATOT] algorithm is proposed for segmentation of topmost object and in the localization module, the location of the object is estimated by computing the 'x', 'y', 'z' co-ordinates of the object midpoint using a unified stereo imaging algorithm. The validity of the algorithms is experimentally verified for object pick and place operations using the object location co-ordinates. The developed stereo vision system was implemented and validated for bin pick and place operations on an Adept Cobra 600 Robot.