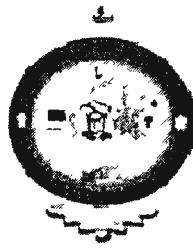


**VISVESWARAYA TECHNOLOGICAL UNIVERSITY
BELGAUM**



Project Report on

OBJECT LOCATING AND SURFACE RECOGNIZING ROBOTIC ARM

Submitted in partial fulfillment of the requirement for the award of the degree of

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ABSTRACT

A robotic arm is a robot manipulator, usually programmable, with similar functions to a human arm. The links of such a manipulator are connected by joints allowing either rotational motion (such as in an articulated robot) or translational (linear) displacement. The links of the manipulator can be considered to form a kinematic chain. The business end of the kinematic chain of the manipulator is called the end effectors and it is analogous to the human hand. The end effectors can be designed to perform any desired task such as welding, gripping, spinning etc., depending on the application. For example robot arms in automotive assembly lines perform a variety of tasks such as welding and parts rotation and placement during assembly.

The project "*Object Locating and Surface Recognizing Robotic Arm*" (OLSRRRA) is built to locate the object placed in a pre-defined area or workspace, so that, the Image capturing device can capture the image of the workspace in regular interval. Process the image, processing the image consists of reading the image and finding the location of the object in the image, calculating the mid point of the object, calculation of the degree of freedom depending on the position of the object.

Using the degree of freedom the *OLSRRRA* can move towards the object and pick the object. The OLSRRRA is built to provide a strong feed back mechanism and also with an ability to interface with any other devices with future enhancements. The robot workspace (sometimes known as **reachable space**) is all places that the end effector's (gripper) can reach.

The *OLSRRRA* processes, calculates and locates the object in the workspace. Once the object is located, the robotic arm finds a path to reach the object. The robotic arm moves towards the object and lifts it. The robotic arm is designed to have enough torque to lift the object. The robotic arm can pick the object from anywhere in the workspace.