

## REAL-TIME PATH PLANNING TRACING OF DEFORMABLE OBJECT BY ROBOT

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**Abstract-** Edge tracing is considered important for deformable object manipulation in order to spread and reveal the original shape of an object before it can be sorted. This paper proposes a unique real-time path-planning tracing method for clothes manipulation by robots. Tracing in this paper context involves tracing the clothes edge, with the robot arm movement based on the calculated path and feedback from sensors. Using tracing method to find a second corner has been proven to be efficient in finding a second corner next to the first corner and not apposite it, resulting in the robot properly spreading the clothes. Adequate force control is also applied to the gripper during tracing so that it doesn't grip the clothes too hard or vice versa which can affect the performance of the robot. Vision sensor is used from time to time to check whether the static gripper has reached the second corner or not. Practical experiments were conducted to evaluate the proposed method. Experimental results have demonstrated the uniqueness and effectiveness of the proposed method.

**Index terms:** Home service robot, path-planning, deformable object manipulation, image processing, sensors.