Positioning the laparoscopic camera with industrial robot arm

This paper introduces a solution for the movement control of the laparoscopic camera employing a teleoperated robotic assistant. The project propose an autonomous robotic solution based on an industrial manipulator, provided with a modular software which is applicable to large scale. The robot arm is envisioned to orient and move the optic device in direction of a fixed point, the incision on the wall of the abdominal cavity, accordingly to the surgeon's request. To manage the movements of the laparoscope around the fulcrum point a Cartesian control strategy is exploited. A six degrees of freedom industrial robot arm is designated to accomplish this manipulation task. The software is implemented in ROS in order to facilitate future extensions. The experimental results shows a manipulator capable of moving fast and smoothly the surgical tool around a remote center of motion.

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