ASYSTENT - CONTROL SYSTEM ASSISTING SURGEON IN LAPAROSCOPY

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Abstract

This paper presents a concept of the multi-level control system for the Minimally Invasive Surgery (MIS). The robot assistant has been proposed to help the surgeon in the laparoscopic cholecystectomy. The ASYSTENT system is the result of the cooperation between Chair of Control and Systems Engineering, Poznań University of Technology, and The Department of General and Laparoscopic Surgery, Hospital J. Strusia in Poznań, Poland. Presented system consists of the following elements: the main unit, the joystick control unit, the unit of force control, the speech recognition system and the vision system. In this project the Stäubli robot RX60, equipped with the force and torque sensor JR3, and the laparoscope, has been used. Communication is realized with the help of TCP/IP protocol.

Keywords: telerobotic system, control system, surgery, laparoscopic cholecystectomy, manipulator, force and torque sensor, speech recognition system, vision system, robot