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Paper Abstract

Name : Neville I. Marzwell , M.S. 198-219
Position/Title: Section Staff, Robotic Systems anti Advanced Computer Technology
Affiliation: NASA/ Jet Propulsion Laboratory
Address : 4800 Oak Grove Drive
Pasadena, California 91109-8099
Phone Number (818) 354-6543 Fax Number: (818) 393-500"/
Gov't Agency/Lab The Subject Technology Was Developed By/For:
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Paper Title: A Telerobotic Surgical Assistant for Laparoscopic Procedure

Category: Medical Technology

Description (use additional sheet if necessary) :

This paper describes initial results anti future enhancements and applications of a telepresent surgical robotic assistant system. This system has demonstrated a potential for improving the quality anti reducing the cost of surgical care by enabling a remotely located surgical specialist to assist in surgery. The core component of the system is a robot laparoscope positioner, called the Automated Endoscopic System for Optimal Positioning (AESOP), which is the first surgical robot to receive FDA approval. AESOP gives direct control of the laparoscope: to the operator through a hand or foot controller. In the telepresent surgical system the remote surgeon controls AESOP through a remote hand controller and can assist the local surgeon in the diagnostics through laparoscope Centrol. The remote surgeon also has two video screens which show the laparoscope view anti a panoramic view of the operating room, as well as a headset for voice communication with the operating surgeon. The initial experiments were performed at Johns Hopkins University School of Medicine and included laboratory and clinical experiments. The experiments were done with the remote surgeon located in a separate room from the primary operating room. A laparoscopic cholecystectomy, varix ligation, and bladder neck suspension were successfully completed in three patients. In each case a less experienced surgeon performed the procedure with the help of an experienced surgeon controlling AESOP remotely. These experiments were performed without the effects of time-delay in data transmission, which could have an impact in robot-surgeon interface in a practical setting. This paper details the initial results and explains future plans for implementing control strategies for such applications as telementoring, teleproctoring, anti teleadvising in surgical procedures.