

ON THE DESIGN AND DEVELOPMENT OF A NOVEL 4-DOF WIRE-DRIVEN LAPAROSCOPIC SURGICAL ROBOTIC SYSTEM, "MU-LAPAROBOT"

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Abstract

This paper describes the design and development of a new wire-driven laparoscopic surgical robotic system, "MU-LapaRobot." The aim of our design is to develop a robotic system to work with traditional surgical tools to reduce the surgeon's learning curve in using our robotic system. The overall design is strictly based on surgical requirements and superior improvements from available research and commercial systems. The concept of parallelogram mechanism is employed to create a unique constraint which is a remote-fulcrum point away from the robot at the small incision on abdominal wall. The ultimate goal of this project is to develop an interchangeable surgical robot which capable of both human-robot collaboration and tele-operation.