内視鏡手術における術者の意図を酌み取る視線追従式術野提示システムの開発

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2003 Fiscal Year Final Research Report Summary

Development of A Laparoscope Positioning System Controlled by Surgeon's Viewpoint to The Target on Imaging Monitor during Laparoscopic Surgery

Research Project

Project/Area Number

13671221

Research Category

Grant-in-Aid for Scientific Research (C)

Allocation Type

Single-year Grants

Section

一般

Research Field

General surgery

Research Institution

Kanazawa University

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Project Period (FY)

2001 – 2003

Keywords

Endoscopic Surgery / Laparoscopic Surgery / Laparoscope Manipulating Robot / Eye Movement Tracking / Eye Point Detection System / Surgeon's Viewpoint / Camera Controlling Program

Research Abstract

Laparoscopic surgery has become more popular with many postoperative benefits for patient. In laparoscopic surgery, however, the cooperation between a surgeon and a camera assistant is important, because the surgeon's view field is relegated to the camera assistant. It may be better that a robotic hand is well developed and manipulates a laparoscope more effectively than camera assistant to show a target as the surgeon aimed. In this study, we developed a simple and small positioning

system for laparoscopic camera that is manipulated by the surgeon's viewpoint on the imaging monitor for reducing his effort with camera control. This system is composed with eye point detection system, micro-controller(PIC), linkage mechanism and two stepping motors. The control signals to the system are analogs with voltage that indicate coordinate values of the eye point on the imaging monitor. The motor controlling program is described with assembly language for effective and fast positioning of the camera. Our experimental results show the effectiveness and potentiality with this camera positioning system controlled by the surgeon's viewpoint on the imaging monitor.

Research Products (9 results)

All Other

All Publications

[Publications] K.Arbter, H.Feussner, G-Q.Wei, A.Ungeheuer, K.Omote, G.Hirzinger, J.R.Siewert: "Autonomer Roboterassistent fuer die laparoskopische Chirurgie"Gesellschaft fuer Biomedizinische Technologien in Ulm e.V.. 12. 23-25 (2001)

[Publications] 表 和彦, 磨伊正義, 金平永二: "直腸癌に対する経肛門的内視鏡下マイクロサージェリー(TEM)適応と手技"治療学. 36・1. 55-59 (2002)

[Publications] 近江政雄: "会話の認知負荷が運転パフォーマンスにおよぼす影響"「ケータイ・カーナビの利用性と人間工学」研究論文集. 51-54 (2003)

[Publications] K.Omote, H.Feussner, G.Wessels: "A new robotic system for minimally invasive abdominal surgery"Annual Report 2003 of Technical University of Munich. (in press). (2004)

[Publications] 島田洋一, 村本貴久, 佐竹祐樹, 近江政雄, 表 和彦: "腹腔鏡手術支援のための術者の視線により制御されるカメラ駆動装置の試作"信学技報. MI2003-60. 25-30 (2004)

[Publications] 表 和彦, 磨伊正義(分担): "内視鏡外科におけるロボティックサージェリーとその将来. 内視鏡外科手術-私たちはこうしている-(北陸内視鏡外科研究会編)"前田書店, 金沢. 282 (2000)

[Publications] K.Arbter, H.Feussner, G-Q.Wei, A.Ungeheuer, K.Omote, G.Hirzinger, J.R.Siewert: "Autonomer Roboterassistent fuer die laparoskopische Chirurgie."Gesellschaft fuer Biomedizinische Technologien in Ulm e.V.. 12. 23-25 (2001)

[Publications] Y.Shimada, T.Muramoto, H.Satake, M.Ohmi, K.Omote: "Development of the laparoscope camera positioning system controlled by surgeon's vision to the target on the image monitor during the operation."Technical Report of IEICE. MI2003-60. 25-30 (2004)

[Publications] K.Omote, H.Feussner, G.Wessels: "A new robotic system for minimally invasive abdominal surgery."Annual Report 2003 of Technical University of Munich. (in press).

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