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Accuracy study of a binocular-stereo-vision-based navigation robot for minimally invasive interventional procedures

Ran Wang, Ying Han, Min-Zhou Luo, Nai-Kun Wang, Wei-Wei Sun, Shi-Chong Wang, Hua-Dong Zhang, Li-Juan Lu

Abstract

BACKGROUND

Medical robot is a promising surgical tool, but no specific one has been designed for interventional treatment of chronic pain. We developed a

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Robotic-assisted minimally invasive esophagectomy: past ...
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7061186
Jun 06, 2019 · After the introduction of **minimally invasive** esophagectomy (MIE) in the early 1990's, **robotic**-assisted techniques followed after the turn of the millennium. The advent of **robotic** platforms has allowed the development of **robotic**-assisted **minimally invasive** ...

Integrate imaging approach for minimally invasive and ...
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Feb 12, 2017 · Imaging in valve procedures. **Robotic** mitral valve surgeries have been done in the US since 2000; they can be performed safely by highly trained surgeons and reduce hospitalization time ().Pre-operative analysis of patients' computed tomography (CT) scans has proven to be an invaluable tool to prepare for surgeries and screen for patients for whom **minimally invasive** surgery is ...

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Surgical Navigation Robot Based on Binocular Stereovision ...
https://www.researchgate.net/publication/251826036...
Surgical **Navigation Robot** Based on Binocular Stereovision ... with the **robot** system makes **minimally invasive** surgery come true, and this also resolve the above problems. ... and to increase the ...

Validation of a CT-guided intervention robot for biopsy ...
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Mar 13, 2017 · **Robot** system. The interventional **robotic** system used in this **study** is a master-slave type **robotic** system for CT-guided needle **intervention** jointly developed by our hospital and a manufacturer (Fig. 1).The **robot** system is mainly composed of three sub-systems (Fig. 2).Master console is an integrated user interface for the purpose of manipulating and monitoring the whole system.

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[PDF] Accurate Positioning for Intervention ... - Robotics Institute
www.ri.cmu.edu/pub_files/2008/10/HL_BioRob2008.pdf
Accurate Positioning for **Interventi** on on the Beating Heart using a Crawling **Robot** N.A. Patronik 1, ... mobile **robot** for **navigation** and as a manipulator for positioning tasks on the epicardial surface of the beating heart. This device could facilitate the delivery of **minimally invasive** therapy through a single incision below the sternum ...

Clinical Effects of Oblique Lateral Interbody Fusion by ...
https://onlinelibrary.wiley.com/doi/10.1111/os.12587
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Author: Shuo Feng, Wei Tian, Yi Wei **Publish Year:** 2020

From medical images to minimally invasive intervention ...
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From medical images to **minimally invasive intervention:** Computer assistance **for robotic** surgery. ... more consistent and **minimally invasive intervention**. ... a number of research groups have focused on the development of micro-**robots** for enhanced control and **navigation** for **robotic** ...

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Navigating inner space: 3-D assistance for minimally ...
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Three-Dimensional Image-Guided Techniques for Minimally ...
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Robotic surgery - Mayo Clinic
https://www.mayoclinic.org/tests-procedures/...

Overview | Why It's Done | Risks | Clinical Trials

Robotic surgery, or robot-assisted surgery, allows doctors to perform many types of complex procedures with more precision, flexibility and control than is possible with conventional techniques. Robotic surgery is usually associated with minimally invasive surgery — procedures performed through tiny incisions. It is also sometimes used in certain traditional open surgical procedures.

See more on mayoclinic.org

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Developing an operation **navigation** system based on binocular vision, and transferring the position of screw-hole to **robot**, drilling and orientation with the **robot** system makes **minimally invasive** ...

Article - Robotic-assisted interventional radiology

https://appliedradiology.com/articles/robotic-assisted-interventional-radiology

Robotic technologies in **minimally invasive procedures** are examples of these innovations. Currently, **robotic**-assisted surgical **procedures** are performed in several disciplines, including general, cardiothoracic and urologic surgery. **Robotic** assistance in **interventional** radiology **procedures** is gaining traction rapidly.

(PDF) Vision-Based Navigation in Image-Guided Interventions

https://www.researchgate.net/publication/51123356...

As mentioned in Section 2.1, advanced **minimally invasive procedures** afford a smaller view of the surgical field. **Navigation** systems provide the surgeon with a tool to reference

Interventional imaging: Vision - ScienceDirect

https://www.sciencedirect.com/science/article/pii/B978012816176000034X

Jan 01, 2020 · 29.1. Vision-based **interventional** imaging modalities. The most common **interventional** use of white light cameras is for diagnostic and therapeutic endoscopy and laparoscopy where the