

AN UPDATION IN THE ROBOTIC SURGERY SYSTEM

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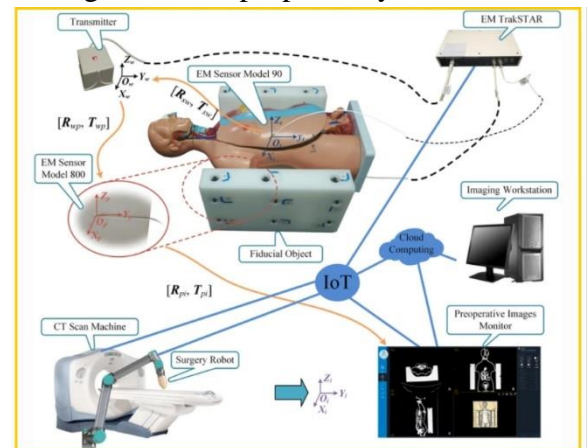
ABSTRACT

This is a new step in the field of distance robotic surgery system in which a system helps to provide the continuous feedback from both the systems. Autonomous systems means the satisfied result either the case of failure and stable the continuous flow. It is not automatic system but provide the good result with minimum human support. The system will provide stability, continuous data transfer and integration to the system without any loss of the information. The autonomous systems have the ability to go at that place where it is not possible for human to reach. Examples of autonomous systems include autonomous robots, autonomous vehicles, autonomous warehouse, autonomous drones, and autonomous factory system.

INTRODUCTION

Here, in this new research I am proposing a new concept to improve the distance robotic surgery system for the healthcare industry in any crisis or calamity. From the time of corona pandemic the world wants a long distance robot system that can operate the patient at a long distance with minimum human contribution. In this research I have proposed the idea at this aspect. The idea of autonomous feedback system will provide the continuity, integration and stability to the long distance system. Autonomous doesn't means that automatic but the stable, continuous and smooth communication.

Fig: - Main diagram of the proposed system



The robotic surgery is not the new thing for the technology but the distance surgery through the robot is a new idea. More than 23 years ago the Intuitive Surgical developed a new system in United State called as the “Da Vinci” system it is named on it’s inventor ‘Leonardo Da Vinci’. He developed this robotic machine for the purpose of less risk in the surgery procedure. Da Vinci Surgical System are now being used for master-slave

robotic surgery procedures such as minimally invasive coronary artery bypass grafting, prostatectomies, cardiac valve repair, and gynecologic surgical procedures, hiatal hernia, lung transplantation etc.



Fig: Da Vinci robotic surgical system

The system provides the small cut to the human body as compare to the open hand human surgery. The system has four different thin arms these arms have a high motion capability as compare to the human hand motions. And the arms can perform four different task at the same time and reduce the blood loss amount. The tasks for the robotic system are given and guided by the human assistance. A professional guide is the need of Da Vinci system.

The system have 3 main aspects:

Surgeon Console: This is the section of this entire system by which the surgeon can control the Da Vinci robot system. It has the controller remote to give the task to the Da Vinci robot.

Vision Cart: This is the section by which the surgeon can see the 3D view of the anatomy of patient. The vision is clear and updated for the user.

Surgical Cart: This is the actual Da Vinci Four arm system that uses a human assistance to perform different various tasks to the

patient. The system have four different kind of arms that perform different tasks at the same time and provide less blood loss to the patient.



Fig: different key aspects of the Da Vinci surgical system.

The system involved in many kind of surgery like liver transplant, heart surgery, gynecologic etc. the it is in used in many of the hospitals and the environment is known about the surgical robot but the system cannot perform the surgery without human assistance and at a long distance.

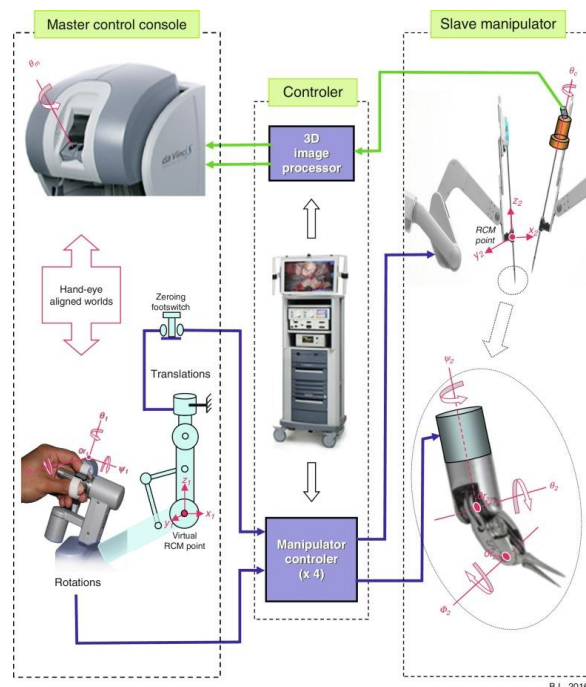


Fig: By this diagram I want to show you the different parts of Da Vinci surgical system

LITERATURE SURVEY

In the world of advance technology new changes came time to time according to the need of the environment. the human robot surgery is not the new thing for the human. 3 March, 1997 was the day when Dr. Jaques Himpens performed the first robotic-assisted operation in Belgium to an alive patient, a cholecystectomy using Intuitive Surgical's robot, named "Mona". A human assistant held the endoscope since this system did not have a camera holder the proposal was rejected. In 1988 the new upadation in the robot assisted surgery launched which is "Da Vinci" robot system. In this system a new module was added the camera system to monitor the patient treatment.

In my research I am proposing a new idea for the long distance robotic surgery system which will provide the continuity in the feedback, integration to the information and will protects the system in case of any problem. By the feedback controller system the level of surgery will increase and a new advancement will come to the healthcare industry.



Fig: Robot performing the entire surgery to the simulated patient

OBJECTIVE

The main objective of this project is to stablish continuous flow of information between the two systems. For this we need an autonomous feedback controller system that

can maintain the continuous and smooth communication between the two systems. Autonomous doesn't means that automatic but the stable, continuous and smooth communication.

Autonomous systems are of three types:-

Multi-Homed Autonomous Systems:

These are the autonomous systems that can interconnect with the multiple systems to get the continuous and smooth feedback

Transit Autonomous System:

These are the types of autonomous systems that behave like the medium and bond between the two autonomous systems.

Stub (Single Homed) Autonomous System: These types of autonomous systems are the autonomous systems that can interconnect with only one single external Autonomous System.

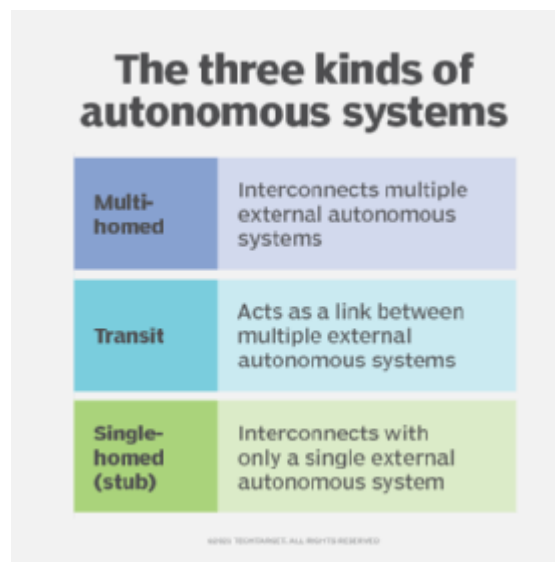


Fig: Types of autonomous systems

CONCLUSION

This idea will make a futuristic system by which a surgeon can perform surgery at a high distance without any feedback stoppage and less human involvement.

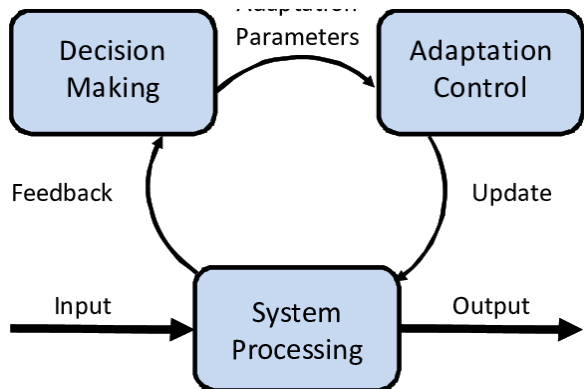


Fig: Autonomous Continuous feedback loop

Some examples of autonomous systems are:-
Crewed Space-craft, Aircraft and Ships.

FUTURE SCOPE

In the future the robot will perform the surgery procedure and serve the healthcare industry. By this research a new updating will come in the field of robot assisted surgery. This will change the way of thinking of the people. The idea will born a new technique to perform the surgery. My research is trying to perform surgery with less human involvement and more robot performance. As the technology always tries to do the work of humankind with less human efforts.



Fig: Robot serving the healthcare industry

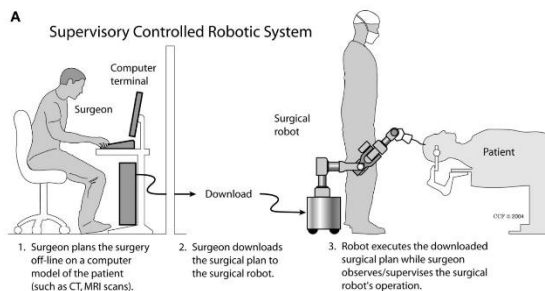


Fig: Human helping robot to perform surgery

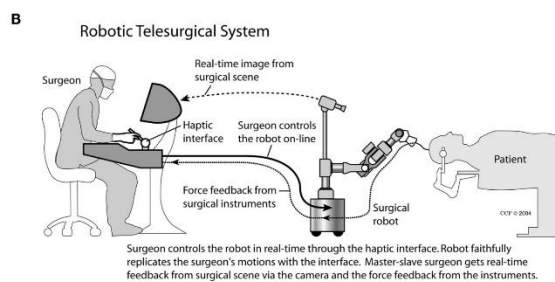


Fig: Robot helping human in Performing Surgery

REFERENCES

<http://www.google.com/>