Surgical Arm Using Artifical Intelligence

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Abstract- *Surgical arms in medicine are the used to perform minimally invasive surgeries using a robotic console. The advancement in thesis is made by image based reading with 3D CT Reconstruction technology. The process of image reading and responsive output are performed using Arm-cortex chip. In this ,we implement a technology TILE PRO and various machine learning algorithm in the field of Artificial Intelligence to be convenient for surgeon to perform surgery by using voice assists.*

I. INTRODUCTION

A arm is based on a mechanical and electronic control , usually programmable with similar functions to a human arm. The links are connected by joints allowing arm rotational motion. Robotic arm has six applications in medical field includes telepresence, surgical assistance, rehabilitation robots, medical transportation robots, sanitation and disinfection robots, robotic prescription dispensing systems. The focus of the project is to implement surgical assistance to perform minimally invasive surgery.

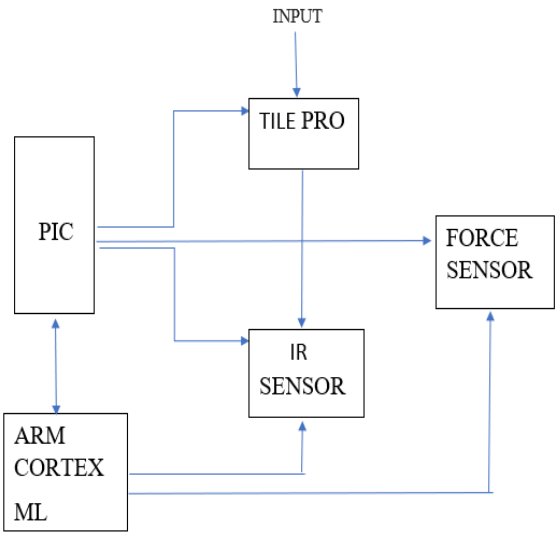
The main part in this idea is to focus on precise location and the soft tissue surgery which is better to improve the results than the manual method using Bistoury. This methodology of implementing the robotic application will improve the standards in surgeries performed in developing countries.

Artificial intelligence in healthcare is the use of algorithms and software to approximate human cognition in the analysis of complex medical data AI does this through machine learning algorithms, which can recognize patterns in behaviour and create its own logic. Robotic surgery is usually associated with minimally invasive surgery performed through tiny incisions. It is also sometimes used in certain traditional open surgical procedures.

Minimally invasive surgery is associated with less pain, a shorter hospital stay and fewer complications. Laparoscopy surgery done through one or more small incisions, using small tubes and tiny cameras and surgical instruments was one of the first types of minimally invasive surgery. Artificial Intelligence is a way of making a computer, a computer-controlled robot, or a software think intelligently, in the similar manner the intelligent humans think.

So far in developing countries like India haven't been that much sophisticated for facilities based on robotic surgery. The primary aim of health-related AI applications is to analyse relationships between prevention or treatment techniques and patient outcomes.

II. SUMMARY OF THE RESEARCH



The ideology behind the project is to perform a minimally invasive surgery in more precisive manner than the existing Da vinci's module (intuitive surgical.inc).The ARM community have developed the silicon based chip technology for machine learning to implement artificial intelligence in advancing technologies.

ARM CORTEX ML

This microcontroller based technology has the processing function based upon the high level embedded programming. This technology helps in connecting each and every chips within the processing functions the 8051 microcontroller chip has been taken impact within it. Embedded C language has been used to program the ARM and has 32-pin port within it. Each port has a sever function to

take part within the system, this processor has the connection with the Programmable IC and the sensor inbuild within the printed circuit board. This chip encoded with surgical anatomy of Grave.

8051-PIC MICROCONTROLLER

This programmable IC has the micro controlling program which is used to perform the image capturing process and it has access to control TILE PRO system to analyse the 3D Reconstruction image of a person who has subjected to surgery.

FORCE AND IR SENSORS

The force sensor is used for the controlling of the axial motions which is present or situated at the head portion of the robotic arm in attachment with the biopsy forceps.

The IR Sensor is used to locate the precision region of the patient who is suffering from the soft tissue detachment and soft tissue sarcoma.

TILE PRO

The NEW Tile Pro is our most powerful Bluetooth tracker for finding all your things. It has a 300 ft. range that's 2X our NEW Tile Mate. This durable, water-resistant tracker is also twice as loud, making it easier to find everything.

The Tile app discovers a Tile and establishes a connection to it using the Bluetooth signal. Once a Bluetooth connection is made between your Tile and mobile device, Tile then uses the location services of your mobile device to communicate up-to-date location information to the app.

III. EXSISTING TECHNIQUES

The existing technique which has been used so far is the Da Vinci Surgical System is a robotic surgical system made by the American company Intuitive Surgical. Approved by the Food and Drug Administration (FDA) in 2000, it is designed to facilitate complex surgery using a minimally invasive approach, and is controlled by a surgeon from a console.

It is an expensive method ,now been advanced for prostatectomy this technology has been powered by state of art designed to filter ,scale, seamlessly translate the surgeons hand movements into more precise movement.

RESULT

By using this kind of ideology in surgery ,the health care market will be more beneficial and more precise in practise of surgeons in developing countries .