

## Auto Surgical-Emissive Hand

**Authors :** Abhit Kumar

**Abstract :** The world is full of master slave Telemanipulator where the doctor's masters the console and the surgical arm perform the operations, i.e. these robots are passive robots, what the world needs to focus is that in use of these passive robots we are acquiring doctors for operating these console hence the utilization of the concept of robotics is still not fully utilized, hence the focus should be on active robots, Auto Surgical-Emissive Hand use the similar concept of active robotics where this anthropomorphic hand focuses on the autonomous surgical, emissive and scanning operation, enabled with the vision of 3 way emission of Laser Beam/-5°C < ICY Steam < 5°C/ TIC embedded in palm of the anthropomorphic hand and structured in a form of 3 way disc. Fingers of AS-EH (Auto Surgical-Emissive Hand) as called, will have tactile, force, pressure sensor rooted to it so that the mechanical mechanism of force, pressure and physical presence on the external subject can be maintained, conversely our main focus is on the concept of "emission" the question arises how all the 3 non related methods will work together that to merged in a single programmed hand, all the 3 methods will be utilized according to the need of the external subject, the laser if considered will be emitted via a pin sized outlet, this radiation is channelized via a thin channel which further connect to the palm of the surgical hand internally leading to the pin sized outlet, here the laser is used to emit radiation enough to cut open the skin for removal of metal scrap or any other foreign material while the patient is in under anesthesia, keeping the complexity of the operation very low, at the same time the TIC fitted with accurate temperature compensator will be providing us the real time feed of the surgery in the form of heat image, this gives us the chance to analyze the level, also ATC will help us to determine the elevated body temperature while the operation is being proceeded, the thermal imaging camera is rooted internally in the AS-EH while also being connected to the real time software externally to provide us live feedback. The ICY steam will provide the cooling effect before and after the operation, however for more utilization of this concept we can understand the working of simple procedure in which If a finger remain in icy water for a long time it freezes the blood flow stops and the portion become numb and isolated hence even if you try to pinch it will not provide any sensation as the nerve impulse did not coordinated with the brain hence sensory receptor did not got active which means no sense of touch was observed utilizing the same concept we can use the icy stem to be emitted via a pin sized hole on the area of concern, temperature below 273K which will frost the area after which operation can be done, this steam can also be use to desensitized the pain while the operation in under process. The mathematical calculation, algorithm, programming of working and movement of this hand will be installed in the system prior to the procedure, since this AS-EH is a programmable hand it comes with the limitation hence this AS-EH robot will perform surgical process of low complexity only.

**Keywords :** active robots, algorithm, emission, icy steam, TIC, laser

**Conference Title :** ICMRA 2015 : International Conference on Mechatronics, Robotics and Automation

**Conference Location :** San Francisco, United States

**Conference Dates :** June 07-08, 2015