TECHNOLOGY
Confidence-Based Robotic Surgery

OVERVIEW

Robotic assisted surgery (RAS) was mainly developed to facilitate minimal invasive surgery by leveraging on the dexterity and precision of programmed tools. The features of this technology allow for smaller incisions, shorter hospital stays and faster wound healing, these benefits being very popular amongst patients, surgeons and insurance companies. Global surgical robotics is predicted to increase to $6.8 billion in 2021 at a rate of 11.3%. While still a relatively new field, the fast growth in the market trend is mainly attributable to the recent major advancements in robotic and camera technology. To date however, complete robotic automation for complex surgical environments has not been achievable as some level of supervision and intervention measures from a surgeon are still required. Studies are currently being undertaken to develop shared control strategies between autonomous systems and manual controls by training and transferring optimized skills from the manual controls to the autonomous robotic controls with the end goal of achieving full autonomous robotic systems for surgical operations.

Invention:

Researchers from the University of Maryland have invented a method that determines an effective shared control strategy between autonomous and manual controls in RAS systems. It consists of a confidence based algorithm that applies confidence measures from signals collected from optimal tasks performed independently from autonomous controls and those independently performed from the manual controls. The collective input allows for the optimization in the overall task performance of RAS systems for collaborative tasks between autonomous and manual controls. The features of this method makes it adaptable to current robotic systems and aims to significantly improve on the efficiency and outcome of autonomous robotic assisted systems.

Benefits
· Increased precision of complex surgical requirements
· Risk reduction
· Shorter duration of surgery
· Shorter recovery

Applications:
· Laparoscopic Surgery
· Gastrointestinal surgery
· Cardiothoracic surgery
· Oncologic surgery
· Pediatric Surgery

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Additional Information

INSTITUTION

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PATENT STATUS

Pending

EXTERNAL RESOURCES

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