

Computer Guided Laparoscopic Surgery Training

Gage Driscoll

University of Arizona Honors College
Tucson, AZ 85719, USA

Abstract

With the increasing interfacing of healthcare and high technology, overwhelming amounts of research and praise have amassed in support of Simulation-Based Training. Though miles ahead of where it began, modern surgical simulation trainers range in fatal deficits, with the ‘most-equipped’ of them lacking functions as fundamental as assistive forces or even tactile sensation (haptic feedback) for training surgeons. The impediments that many of these modern systems possess have implications that prevent them from being the ultimate degree of surgical training, and prevent them from training ultimate surgeons. This poster is a presentation of the methods and functional advantages of the Computer-Aided Surgical Trainer (CAST) with an overview of the system’s evolution. Using the Fundamentals of Laparoscopic Surgery (FLS) as an objective learning metric, the CAST system can train the highly specialized skills of laparoscopy to a surgeon without any of the risks or wasted resources associated with existing methods (mentor-trainee dynamics, cadavers, animals, etc.). By integrating sensors, image processing, machine learning, and augmented reality (AR) techniques, CAST is able to provide the surgeon real-time feedback and guidance in the development of their skills in laparoscopy.