

Surgical Virtual Reality – Highlights in Developing a High Performance Surgical Haptic Device

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Abstract

Just like simulators are a standard in aviation and aerospace sciences, we expect for surgical simulators to soon become a standard in medical applications. These will correctly instruct future doctors in surgical techniques without there being a need for hands on patient instruction. Using virtual reality by digitally transposing surgical procedures changes surgery in a revolutionary manner by offering possibilities for implementing new, much more efficient, learning methods, by allowing the practice of new surgical techniques and by improving surgeon abilities and skills. Perfecting haptic devices has opened the door to a series of opportunities in the fields of research, industry, nuclear science and medicine. Concepts purely theoretical at first, such as telerobotics, telepresence or tele-representation, have become a practical reality as calculus techniques, telecommunications and haptic devices evolved, virtual reality taking a new leap. In the field of surgery barriers and controversies still remain, regarding implementation and generalization of surgical virtual simulators. These obstacles remain connected to the high costs of this yet fully sufficiently developed technology, especially in the domain of haptic devices.

Key words: surgical virtual reality, haptic device, virtual surgical training

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