Virtual Reality and Tele-immersion in Health Care
Introduction to Minitrack

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1. Introduction

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Overview of Field

This minitrack focuses on the impact on the healthcare domain of two rapidly emerging, advanced imaging technologies - virtual reality and tele-immersion. Virtual reality is an artificial environment created with computer hardware and software and presented to the user in such a way that it appears and feels like a real environment. Collaborative virtual reality is the use of two or more virtual reality environments and high-performance networking to support synchronous collaboration focused on the same virtual reality models. Tele-immersion is defined on the integration of audio and video conferencing with a collaborative virtual reality environment.

Biomedicine is a domain in which the evaluation and synthesis of visual information is a necessary condition for successful problem solving and learning. Learning that involves the understanding of three-dimensional relationships is very complicated. For example, the natural ability to visualize three-dimensional space is rare, even among surgeons.

Virtual reality and tele-immersion are technologies that are now being applied, with some success, to different problems sets in healthcare. Applications involving virtual reality and tele-immersion include clinical care, distance-independent collaboration, and education and training.

This Year’s Content

This is the first time this minitrack has been part of the HICSS. The papers accepted are representative of the current range of virtual reality and tele-immersion efforts in healthcare. The preponderance of applications aimed at the delivery of training is also representative of the field.

Two papers illustrate the potential use of virtual reality and tele-immersion approaches to train residents in anesthesia and health care teams in emergency medicine. Another potential use of virtual reality and tele-immersion technologies is to demonstrate the impact of vision disorders on patients in the hope that this experience will make them healthcare professionals and family members more informed about and sensitive to the challenges facing the patient.

Two of the papers deal more directly with healthcare delivery. One evaluates the utility of virtual reality and tele-immersion plus robotics in allowing surgeons to monitor and mentor others at geographically-dispersed sites. The other demonstrates the use of virtual reality and tele-immersion as a rehabilitation modality for persons with disabilities.

While the field is still immature, these papers demonstrate the enormous potential for the use of virtual reality and tele-immersion technologies to improve the quality of healthcare while increasing access and decreasing costs.