2009-01-20 OSC NEWS: SensAble Showcases New 3D Touch-Enabled Applications for Trainee Surgeons

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By Rajani Baburajan, TMCnet Contributing Editor
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SensAble Technologies, a provider of 3D touch-enabled applications, said it is showcasing new touch-enabled applications at the Medicine Meets Virtual Reality (MMVR) conference in Long Beach.

The products displayed include a skin cancer punch-biopsy training application and a spinal implant training application. Also on display is the recently released OpenHaptics version 3.0 software development toolkit for creating touch-enabled applications.

Touch-enabled computer simulation and training applications are on the rise as a practical way to enhance surgical training, reduce risks for patients and doctors, and measure proficiency. In order to achieve proficiency, surgeons need between 60 and 500 repetitions of a surgical procedure. However, medical schools provide 10 to 20 repetitions; the rest of the training is provided during supervised surgery.

Touch-enabled computer simulation of medical procedures improves sill acquisition, while presenting zero risk to patients, decreasing operating room and instructor time, and allowing clinics unlimited practice in a realistic setting as their performance is measured and tallied.

The skin cancer punch biopsy application is developed by the Ohio Supercomputer Center (OSC). The application uses SensAble's PHANTOM haptic device to provide force feedback to teach the trainee the optimal placement and expected "feeling" of obtaining skin punch biopsies at different locations on the body. The application uses actual images of lesions uploaded from clinics for simulation.

"We have created several extremely realistic touch-enabled training applications using SensAble's haptic devices and software," said Don Stredney, research scientist at the Ohio Supercomputer Center and director of its Interface Lab, in a statement.

Stredney further said the Center is looking forward to the integration of their technology with SensAble's new APIs, specifically the depth of penetration feature in OpenHaptics 3.0.

The spinal Implant Surgery Simulator is created by Simulution for Zimmer Spine. The application trains surgeons on the exact "feel" of the

company's PathFinder spinal implant technology while eliminating exposure to radiation, SensAble said. In traditional cadaver-based training scenario, surgeons are exposed to radiation for a long period as they use fluoroscopic image in many surgical processes pertaining to vertebrae.

In Simulution's CyberSpine system, the trainee surgeons hold a SensAble PHANTOM haptic device in place of the canulation tool and screwdriver used to tighten the screw. The PHANTOM literally pushes back on the surgeon's hand, so they "feel" each step of the procedure. At the end of the surgery, surgeons are evaluated, and their progress is measured over time.

"SensAble's artificial touch allows surgeons to repeatedly practice these high-risk surgeries in a very realistic environment, without the traditional constraints and risks," said Bruce D. Anderson, principal investigator at Simulution, in a statement. "We see the use of haptics in our applications as a key component in helping us improve patient safety and outcomes through better surgical training."

OpenHaptics version 3.0 toolkit comes with the new QuickHaptics microAPI. The application includes features specifically implemented for use in medical applications. The new version also comes with reusable source code examples that demonstrate how to program key functionality, such as setting different material properties based on depth of penetration for needle insertions, SensAble said.

"Haptics are changing the training paradigm in medicine," said Joan Lockhart, vice president of sales and marketing at SensAble, in a statement. "With dozens of medical training and simulation applications already in use worldwide – and many more in development – our haptic solutions have emerged as the standard for touch enabling, and enhancing the realism of simulation platforms."

Rajani Baburajan is a contributing editor for TMCnet. To read more of Rajani's articles, please visit her columnist page.

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