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Development of a Haptic Environment for Biomedical Engineering Simulation

An Educational Software to Help Demonstrate a Virtual Human Torso Model

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In the current world, by and large, computer interaction relies on visual and auditory feedback and to make interactions more realistic, tactile response would be essential e.g. for medical training simulations.

Haptic interfaces would make the digital models to be probed and felt by the users and more specifically in a medical world by medical students, these simulations, also can reduce costs and provide experience with a greater variety of pathologies, and enable the trainee to repeat training procedures over and over without the need for a cadaver.

The system being developed as part of this research program will enable it to be used in conjunction with a simple surgical simulation which will have both visual and tactile feedback. The simulation allows users to not only see an on-screen computer application, but to actually 'feel' it by touching and manipulating virtual objects

The demo purpose would be to show the capabilities of the software which are as follows:

- The software together with the haptic device could eventually replace the actual human torso model being utilised by medical students
- Also by assigning different stiffness's to the organs the user is offered the opportunity to experience a realistic feedback
- Further more, the software allows the user to interactively hide organs hence, the user would be able to delve into different depth of the human body

The demonstrated software is accompanied by one of the SensAble Technologies PHANTOM® product line of haptic devices, namely, the PHANTOM Omni. (as illustrated in the Figure below)

Figure 1: PHANTOM Omni