



University of Central Florida

Technology Available for Licensing

tt.research.ucf.edu

Medical Training with Physical-Virtual Patient Bed

The Physical-Virtual Patient Bed System simulates a human patient in a hospital bed with the ability to change appearance (race and various medical symptoms), alter size (child or adult), and mimic critical physiological signals. The system may be used for a range of civilian and military medical training.

Background

Medical simulation and training centers often make use of stand-ins or surrogates for patients, including human actors who pretend to be sick or sophisticated robotic human mannequins called “human patient simulators” (HPS). Humans do not always offer consistency, and HPS cannot change appearance or exhibit human emotions. Because of deficiencies in the current technology, there is a need for this type of customizable system.

Advantages

This is a real hospital bed with a Physical-Virtual Patient shell lying in it. The system’s electro-mechanical components change body shapes, project different appearances, change temperature, simulate pulse and breathing, and sense touch. The system provides very realistic dynamic visual appearances, including “nearly human” patients that can turn and look at you, appear pale or flush, appear to cry, smile, etc., to provide a more realistic experience to prepare trainees for diagnosing real patients. The Physical-Virtual Patient Bed is relatively inexpensive compared to an HPS, because of the interchangeability of the shells without replacing the expensive components fixed in the bed system.

Technical Details

The system includes a translucent or transparent patient shell secured to a patient bed, which is illuminated from below by one or more projectors in the bed system. These projectors are adapted to render dynamic patient imagery onto the underneath of the shell so that the image appears on the surface of the shell in a realistic manner. One or more computing units including memory and a processor unit communicate with the projectors and other sensory devices to provide the interactive simulation. Sensory devices include, but are not limited to: optical touch sensing devices, targeted temperature feedback devices, audio-based tactile sense of pulse devices, and spatial audio components with signal processing device to simulate vital signs. The system further includes interchangeable human shells and parts of human shells representing body parts. By using these shells, there is no need to change out the expensive and sensitive components that remain fixed in the patient bed system.

Patent Pending



Physical-Virtual Patient Bed System

Benefits

- Cost-effective
- Visually realistic
- Repeatable and consistent
- Customizable behavior
- Interactive simulation

Applications

Medical simulation centers at universities, hospitals, and military training facilities

Tech Fields

Educational Tools, Medical Devices

Keywords

virtual patient, simulator, medical training, physical-virtual

UCF Inventors

Greg Welch, Ph.D., Kelly Allfred; Karen Aroian, Ph.D.; Arjun Nagendran, Ph.D.; Remo Pillat; Steven Talbert, Ph.D.; Patricia Weinstein

If you or your company are interested in this opportunity, Contact:

John Miner | 407.882.1136 | John.Miner@ucf.edu | Tech ID# 32973

UCF Office of Technology Transfer | 12201 Research Parkway, Suite 501, Orlando, FL 32826