

# OR Scrub Nurse/Technician Training Simulator

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## Technology description

Operating Room (OR) nursing staff includes registered nurses and surgical technicians. The intensity of the OR conditions demands that these professionals are optimally trained to maximize patient safety and surgical outcomes. Safe handling and efficient transfer of surgical instruments, supplies, equipment and medications must be carried out in a planned, organized, standardized, and functional manner. The typical timeframe to become proficient with these necessary skills ranges from 6 – 12 months. Dr. Jim Rowbottom and his team have developed a simulator to allow operating room scrub nurse or scrub tech students to practice recognizing instruments, set up the instruments for various surgeries, hand off instruments in a sequential manner, and anticipate the next instrument required. The instruments are tagged with an RFID tag and a "hand" with a sensor is used to accept the instrument and identify if it is correct and in the right orientation. There is a voice command and feedback. Speed and accuracy are graded for the learner. The devices developed in this invention aims to create a simulator that allows individualized training in a home or classroom setting, as well as in a more formal simulation environment. The simulator enables accelerated learning of instrument identification, standard table set-up, accuracy and speed of passing instruments – including instrument orientation – and ultimately, the anticipation of the next surgical maneuver. The system also allows for the ability to select from a library of different surgical cases which can be tailored by degree of difficulty and customized for individual surgeons or staff. The entire system includes a microprocessor, RFID sensor, sound card, force sensor, servos, and LED lights to be housed within a mechanical arm. The microprocessor will be placed so that the RFID sensor will be within the wrist and sufficiently close to the source signal of an RFID on each test instrument. Within the forearm, the servo motors will provide and control the movements to make the mechanical arm's fingers, wrist, and elbow robotic. The force sensor located in the palm and trigger when the servos rotate to close the fingers. LED lights will be placed throughout the hand and light based on the correctness of the instrument chosen and the degree of proper force in which it is placed in the hand. Other features include a laptop-based system and simulation lab set-up for flexibility of use; voice request and feedback; recording of response times for indicating progress of the trainee over time and scoring capability of "tasks" to measure strengths and weaknesses of the individual being The U.S. market for automated nonsurgical simulators was worth approximately \$40 million in 2010 and is projected to grow at a CAGR of 20%-25% over the next five years, reaching \$125 million by 2016, according to BCC. Savings in training time and an increasing emphasis on improving the quality of patient care and safety contribute to

driving this growth, in which this technology is well positioned. Additionally, the aging OR nurse workforce coupled with little to modest emphasis on OR nursing in nursing schools make the potential of a nursing / tech shortage a reality. The opportunity to shorten the learning curve for these positions will alleviate the disruption in patient care and make this simulator a highly desired device with a potential for substantial ROI.

## Institution

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