

Press release

SIMROID: Realistic patient robot for dental education and training

“Patient robot” indicates future training Options

Dietzenbach, March 2013 - At this year’s IDS in Cologne, the long-established Japanese company, Morita, is attracting particular attention on its stand with its SIMROID patient robot: SIMROID realistically simulates the behavior and reactions of a patient and can communicate with students and dentists in Japanese and English. Both dental treatment and appropriate communication skills can be learned using the robot under almost real conditions. The practice units are monitored and recorded by two cameras and a computer that can also control the “patient’s” reaction. SIMROID is an ideal addition for dental training and represents the possible next generation training model.

Morita is a globally run family-owned company which has traditionally relied on user-oriented designs and taken on the task of developing solutions for dentists to make everyday life easier and promote patient wellbeing. With the patient robot, the long-established company is now turning to the root of dental training, to facilitate modern and future-oriented dentistry. To this end, Morita is working openly in partnership with dental institutions and dentists to recognize trends and convert them into innovative solutions.

SIMROID – the route to perfect simulation

So far, dental training simulators have been predominantly directed at technical and tactile skills. This indeed represents a good basis for working on real patients – but training on a phantom head or human specimen does not prepare the student for the real behavior of a human being in the stressful situation of dental treatment.

The SIMROID patient robot now addresses this shortcoming. The patient simulator was developed in cooperation with the Nippon Dental University (in Tokyo and Niigata) and can evaluate the work of subjects via sensors in the oral cavity and send them to a computer. Prospective dentists thus learn to deal with “problem” patients as well. The instructor observes and controls the training units from a computer and can also record treatment for evaluation and graphic presentation – making it easier to document achieved learning progress.

The Japanese Education Minister singled out the Nippon Dental University at the end of 2005 to contribute to a program for the evaluation of medical training – as a result, the university concluded a development agreement with Morita for a patient robot. A first SIMROID prototype was finally completed in 2008. A year later, Morita received the go-ahead for the further development of the prototype to market and finally gained approval for use of the robot patient in training at the start of 2012.

Perfectly compatible with Morita treatment units

The robot can be easily integrated into the Soaric and EMCIA treatment units using connections on the surface of the seat. Appropriate upper and lower jaw models can be inserted and attached with the mouth open; these can be equipped with a drill and pressure sensor. Information transfer and data storage is performed via an IC chip. The new patient robot also responds to questions and instructions, moving its eyelids, eyes, mouth, neck and its left hand by means of a pneumatic drive cylinder, and making the simulation close as possible to the behavior of a "real" human patient. The instructor can simulate different treatment situations and patient types by means of various program settings. Some clinical scenarios are already pre-programmed – from patient contact to root canal treatment. For example, SIMROID reacts with a gag reflex during treatment or flinches after an inadvertent touch, expressing its displeasure.

The patient robot is controlled via a fast-operating touch screen monitor. The specially developed Graphical Use Interface (GUI) System allows the training participants to be monitored and directly influences the behavior of the SIMROID. The monitor shows the treatment from both camera perspectives and allows the trainer to choose from a series of optional reactions. This means the training unit

can be individually adjusted to each situation. All in all, the SIMROID consists of the patient robot, the SIMROID CCD camera supports and the GUI System: a computer, an LCD touch screen monitor, two CCD cameras and the speech recognition head set.

Taking tradition into the future

Since the company was founded by Junichi Morita in 1916, Morita has been manufacturing its products to the highest quality demands and basically designing the future of dentistry at the same time. In numerous fields of modern dental medicine, the company is a pioneer leading the way: In the fields of digital imaging and endodontics, the company has set new standards for improving the quality and comfort of treatment. Morita concentrates on the needs and desires of dentists and consistently makes sure that the limits of what dentistry can do are extended through key innovations and further developments in practice and in training.

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