

Japan unveils willing dental patient -- a robot

25 March 2010, by Miwa Suzuki



A dentist from the Showa University Dentistry School demonstrates treating a robot named Hanako Showa in Tokyo. Doctors and robotics researchers have unveiled a robot that happily goes under the drill for orthodontics students and can also express pain, roll her eyes and even drool like a real patient.

Few people would want to be guinea pigs for aspiring dentists but Japan has found an always-willing patient -- a robot.

Doctors and robotics researchers on Thursday unveiled a humanoid that happily goes under the drill for orthodontics students and can also express pain, roll her eyes and even drool like a real patient.

"Hello," female-looking "Hanako" said cheerfully as an aspiring dentist closed in during a presentation in Tokyo. "Please take care of me."

But the robo-patient's mood can quickly take a real-life turn for the worse if the grinding and drilling get too much or the wrong spot is hit.

"It hurts," said Hanako, dangerously moving her plastic head while a dental student was grinding her resin teeth, which are designed to be taken out

and examined later to assess the student's skill.

In the demonstration, under the watchful gaze of an instructor, the dental student reacted quickly, deactivating and moving the sharp-pointed grinding tool to avoid damaging Hanako's teeth or gums.

"Please raise your left hand when it hurts because it's dangerous to move your mouth," the student told the machine lying in the dentist's chair.

To add to the realism, Hanako can also move her eyes and eyelids, jaw and tongue. She even discharges a saliva-like liquid and slowly slackens her jaw muscles to simulate the gradual "fatigue" of a real patient.

Hanako was developed by the medical Showa University and a research team led by humanoid pioneer Atsuo Takanishi, a professor at Waseda University, both Tokyo-based, as well as [robot](#) maker tmsuk based in southern Japan.

The price tag is confidential, the inventors said.

Japan already has humanoid robots for a variety of tasks, from receptionists to photo models, but the field of patient robots is still small.

Hanako is the world's first that has been used to evaluate the skills of [dental students](#) on a large scale, according to Showa University. This month 88 of its students trained and took clinical exams using her.

Koutaro Maki, vice director of the Showa University Dental Hospital, told a press conference that the use of the humanoid meant a vast improvement from the traditional method to teach and train young dentists.

"We still have a system where the 'apprentices' watch doctors with higher skills, borrow from them and copy them... This is not scientific," he said.

"Education in the medical and dental fields is underdeveloped. I wouldn't say it's the Galapagos islands, but it is undoubtedly a final frontier. The key to cultivating this undeveloped land is a robot."

The great thing about using robots, Maki said, is that it "allows students to make many mistakes" from which they can learn.

Shugo Haga, a 26-year-old dentist-in-training, said he had previously used a mannequin's head but said it felt like using a mere "object."

Sitting next to Hanako, he added: "This one isn't easy to cope with, but she is close to being a patient."

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