

# IN THE SPOTLIGHT

## ■ New chapter in the cooperation NASA with GE

Engineers and scientists from NASA and General Motors with the help of engineers from Oceaneering Space Systems of Houston, developed and built the next generation of Robonaut 2 (R2) - a faster, more dexterous and more technologically advanced robot. R2 can use the same tools as humans, which allows them to work safely side-by-side humans both on Earth and in space. Going everywhere the risks are too great for people, Robonaut 2 will expand people's capability for construction and discovery.

Using leading edge control, sensor and vision technologies, future robots could assist astronauts during hazardous space missions and help GM build safer cars and plants.

The idea of using dexterous, human-like robots capable of using their hands to do intricate work is not new to the aerospace industry.

NASA and GM cooperate since 1960s (through a Space Act Agreement at the agency's Johnson Space Center in Houston) with the development of the navigation systems for the Apollo missions.

The original Robonaut, a humanoid robot designed for space travel, was built by the software, robotics and simulation division at Johnson in a collaborative effort with the Defense Advanced Research Project Agency 10 years ago.



More information on Robonaut and video at: <http://robonaut.jsc.nasa.gov>

Based on <http://www.sciencedaily.com>

## ■ New simulator for da Vinci Robotic Surgical System

RoSS - the Robotic Surgical Simulator, developed by Thenkurussi ("Kesh") Kesavadas (University of Buffalo's School of Engineering and Applied Sciences) and Khurshid A. Guru (Roswell Park Cancer Institute) allows surgeons to practice skills needed to perform robot-assisted surgery without risk to patients. It is one of the world's first simulators that closely approximates the "touch and feel" of the da Vinci robotic surgical system.

Khurshid A. Guru, MD, director of the Center for Robotic Surgery and attending surgeon in RPCI's Department of Urology, and Thenkurussi Kesavadas, PhD, professor of mechanical and aerospace engineering at UB and head of its Virtual Reality Lab, founded the Western New York-based spin-off company, Simulated Surgical Systems, LLC, to commercialize the simulators. Both stress how important is training for proficiency for surgeons, especially in robot-assisted operations, just like in the aircraft, they say. "Think of the RoSS as a flight simulator for surgeons", said Mr Kesavadas to RobotWorldNews' reporter.

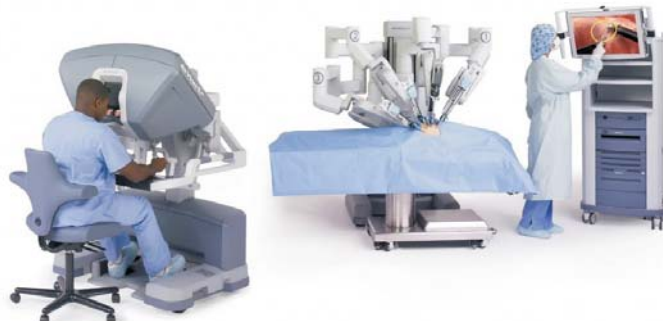
The RoSS will play an educational role for RPCI and other similar institutions involved in robot-assisted surgical systems.

Already, at least 70 percent of all prostate surgeries in the U.S. are performed using robotic surgical systems; robotic surgeries are generally less

invasive, cause less pain, require shorter hospital stays and allow faster recoveries than conventional surgery. Robotic surgical systems are increasingly being used for gynecologic, gastrointestinal, cardiothoracic, pediatric and other urologic surgeries. Is expected that Ross will be commercially available by the end of 2010.

More information: <http://www.buffalo.edu/news/10997>

Based on: <http://www.robotworldnews.com>



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## ■ Precise security technology based on voice recognition

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According to Dr. Robert Rodman, professor of computer science at North Carolina State University, and his fellow researchers, their new research will help improve the speed of speech authentication, with keeping accuracy. There are no two identical voices, just like the fingerprints or faces. Current technology is still too slow to gain widespread acceptance person's voice recognition may take several seconds or more. The response time needs to improve without increasing the error rate.

Scientists extended SGMM method (sorted GMM - a novel Gaussian selection method) by using 2-dimensional indexing, which leads to simultaneous frame and Gaussian selection. They modified existing computer models to streamline the authentication process so that it operates more efficiently.

Potential users of this technology are governments, financial, insurance, health-care and telecommunications industries everywhere where high level of data protection is needed.

The others co-authors of the research are: Rahim Saeidi, Tomi Kinnunen and Pasi Franti of the University of Joensuu in Finland; and Hamid Reza Sadegh Mohammadi of the Iranian Academic Center for Education, Culture & Research.

The research, "Joint Frame and Gaussian Selection for Text Independent Speaker Verification", was presented in March at the International Conference on Acoustics, Speech and Signal Processing (ICASSP) in Dallas.

Source: <http://www.sciencedaily.com>  
<http://www.ncsu.edu>

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## ■ New feature of robots': a runny nose

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At Tsukuba University in Japan Yotaro, a robot, which emulates a real baby, has been constructed. It's full-cheeked face, made of soft translucent silicon with a rosy hue, looks a little weird with so luminous blue eyes. It also has sporting a pair of teddy-bear ears.

Robot's face is backlit by a projector connected to a computer to simulate crying, sneezing, sleeping, smiling, while a speaker can let out bursts of baby giggles. Mood's changes are based on the frequency of touches. It moves its arms and legs when different parts of its face and body are touched. Yotaro also simulates a runny nose, with the help of a water pump that releases body-temperature droplets of water through the nostrils.

The inventors hope that cute Yotaro will induce young Japanese people to parenting through showing its pleasures as Japan faces a demographic crisis. Japan has the world's longest average life expectancy and one of the lowest birth rates. The fifth of the population is aged 65 or older. By 2050, that figure is expected to rise to 40 percent.



Source: <http://www.physorg.com>