

IN THE SPOTLIGHT

■ Blooming robots, dancing flowers

Scientists from Gwangju's Chonnam National University have developed a robot plant that emits oxygen, moisture, insecticidal pesticides, and fragrance. It also has all kinetic functions and responds at stimuli from outside - like real plants. When a person or animal (or another moving object) approaches within a 40 cm radius of the robot, the buds come into bloom. Robotic plant returns to its original state when objects leave - it is enabled by using SMA - Shape Memory Alloy to make it. The flower react also for sounds louder than usual, including music, and light. It is possible because a supersonic sensor that perceives the motion and turns the steam towards person, and the flower opens. Moreover, the plant can dance when music is played. Robotic pot plant is 130 cm tall and 40 cm in diameter and consists of a pot, a stem, and five buds of a flower which looks like a rose of Sharon (a national flower of South Korea). You can have a "Roses robots garden" by using a networking system. However flower robots are not new - some have already been developed in the U.S., this robotic plant is currently the most advanced. Retail price is not quoted. Professor Park Jong-Oh and his team struggles with automatically change of flowers' colour. The robotic plant debuted in November at a Robot Festival at Seoul's COEX Mall.



Source: <http://www.engc.ac.kr/english/>

Image source: www.aving.net

■ Marine barber

Ships also need shaving their "beards". Scientist from 10 countries under University of Newcastle co-ordination is currently constructing an autonomous robot designed for cleaning the hulls of the ships. European Union assigned 1.2 million Euros for Hull Identification System for Marine Autonomous Robotics programme - from which a robot is called HISMAR. More or less once a year a ship has to be "shaved" - all crustacea, algae, seaweeds and shells, which have pilosed a hull must be scraped. If not, a ship has much bigger resistance (up to 40%) to the water and floats noticeable slower (1-2 knots, which means from 1,9 to 3,8 km/h). Extra fuel's cost (more even 20 percent) caused by this effect amounts to 9 billion dollars. Because the "shaving" operation is long-term and big ships need repair dock for this, special anti-sprouting paints are used; nevertheless paints' ingredients, like lead, copper or tin, are toxic for natural environment. Year ago EU has strictly forbidden ships painted tin-based dye to call a European harbour.

HISMAR is composed of modules, weights less than 180 kg, adheres to hull due to magnetic systems (enduring weight up 350 kg) and moves on 4 small wheels. A small computer embedded into robot draws its route. Cameras transmit view of surface and enable to detect damages of ship's skin plate. Robot cleans the hull by ejecting a water jet under 200-bar pressure. Dirty water with removed parasites is pumped to special chamber on the ship, where is undergone purification.

HISMAR can be set in motion during every stopover, even on the sea and with working engine (if ship floats slowly).

Whole programme with a prototype was shown in Hamburg, Germany, during marine exhibition SMM 2008 Shipbuilding, Machinery and Marine Technology.

Source: hismar.ncl.ac.uk / www.hismar.eu and Rzeczpospolita.pl

■ Murata Boy has a female friend

Electronic parts maker Murata Manufacturing Co., Ltd., creators of the popular Murata Seisaku-kun (a.k.a. "Murata Boy") robot bicyclist, have developed a self-balancing robot unicyclist named "Murata Seiko-chan". The 50-centimeter tall, 5-kilogram Seiko-chan, which Murata says is modelled after a female kindergartener features a pair of gyro sensors that detect her posture angle. A single wheel moves the robot forward and back, and a rotating flywheel in the chest helps turn the unicycle left and right and maintain balance. In addition to ultrasonic sensors detecting and measuring the distance to potential obstacles, Seiko-chan is equipped with built-in Bluetooth capabilities and an embedded camera that transmits live video. According to Murata's press release, Seiko-chan is described as Seisaku-kun's younger paternal cousin.

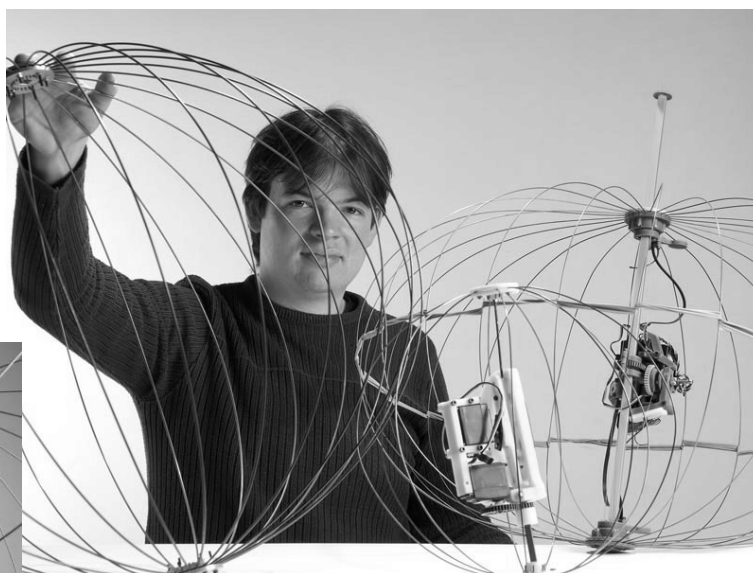
Source: <http://trendy.nikkeibp.co.jp/article/news/20080924/1019000/> and <http://www.pinktentacle.com/>

Image: courtesy of Murata Manufacturing Co. Ltd.



■ More and more insect-like robots

First robot that can jump like a grasshopper and roll like a ball was invented by Rhodri Armour, a PhD student at Bath University's Centre for Biomimetic & Natural Technologies, UK. One of the major challenges that face exploration robots is being able to move over rough terrain. Jumping in a similar way to the grasshopper, robot can overcome bigger obstacles than conventional robot with wheels; it is also much cheaper to construction than robot with legs. "Jollbot" is cheap, light (it weights less than 1 kg), small and flexible, meaning it's not damaged when landing after jumping. The "Jollbot" is shaped like a spherical cage, which can roll in any direction, giving it the manoeuvrability of wheels without the problem of overturning or getting stuck in potholes. "Before jumping, the robot squashes its spherical shape. When it is ready, it releases the stored energy all at once to jump to heights of up to half a metre", Mr Armour said. The components of the robot were made by rapid prototyping technology, similar to that used by the RepRap machine pioneered by the University, which builds parts by "printing" layers of plastic on top of each other to produce a 3D object.



Apparently Jollbot can be used in land survey work. Inventor hopes that his brainchild will also play key role in future space exploration.

Source: University of Bath and <http://www.sciencedaily.com/releases/2008/12/081204074810.htm>

Images: courtesy of University of Bath