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INTELLIGENT HOME ROBOTS

An intelligent robot, as a performing machine, must accept the task in a general form, and the robot itself must be able to make decisions or plan its actions in an uncertain or complex environment that it recognizes.

A young American company Willow Garage is developing a four-wheeled home robot Personal Robot 2 (PR2). The company has set itself the task of developing truly intelligent and multi-functional robots for everyday use as assistants. PR2 is a robot that is slightly taller than a human and weighs 145 kg. He has four degrees of freedom in the body, has two arms with eight degrees of freedom. Three more degrees of freedom "rely" on a head equipped with a stereo camera and a laser rangefinder. All electrics, mechanics, power supply, three on-board computers, electronics plus software are enclosed in the robot itself.

The most impressive achievement of this robot at the moment is the independent passage of the “maze” of rooms, corridors and closed doors in search of standard (important) household outlets, from which this bot successfully charges its batteries.

The robot controls the force developed by his hand (sensors are built into the articulation motors). Moreover, at the end of each of his fingers there are 22 pressure sensors. So he feels the movement of the door well and does not press it too hard where it is not required. In this skill, the new bot is closer to the person than to the previous machines, which opened the doors in advance by the “learned” and rigidly defined movement.

The ideology of the PR2 project is the development of household robots with a "mind" based on a special open source robot operating system (ROS). This

spring, Willow Garage distributed ten copies of PR2 to student research labs for free.

Recently, experts at the University of Tokyo (University of Tokyo) have modified ROS from the "garage" in order to build something of their own. And this only expands the possibilities of the project, to which one way or another more and more specialists are joining.

Scientists from the University of California at Berkeley (UC Berkeley) for the first time trained the robot, provided by Willow Garage, to interact with deformable objects. The machine has been taught how to work with soft and, most importantly, objects that change shape easily and unpredictably.

The Mahru Ahra project started at KIST back in March 2005. Mahru is the name of the android boy, Ahra is a robot girl. At the institute, more than $ 3.5 million a year is spent on the development of humanoid machines, which made it possible to create several modifications of androids that are about one and a half meters tall and weigh about fifty kilos, which have thirty-odd degrees of freedom. The latest show featured a two-legged Mahru-Z and a wheeled version of Mahru-M. According to the KIST press release, thanks to the technology of high-speed three-dimensional object recognition and high-precision manipulations of objects, robots are able to "cook simple food."

Work on the creation of home robots is carried out by many large universities in the world, often on the orders of the military. This is due to the possibility of using the developed technologies in various fields, and first of all - to create military robots.