

NASK - Sense of telecommunications

<http://eng.nask.pl/en/news/events/events-2019/1692,Universal-control-module-for-autonomous-devices-was-constructed-in-NASK.html>
2019-09-17, 09:40

Universal control module for autonomous devices was constructed in NASK

Universal control module for devices moving autonomously around buildings, e.g. industrial vacuum cleaners, which uses various supplementary location techniques: beacons, RFID and signals from industrial cameras, was constructed in NASK – Research and Academic Computer Network. Its' application would make steering devices more accurate and enable building DIY machines.

Developing the location system for mobile robots moving inside the buildings was financed by Polish Agency for Enterprise Development on request of Warsaw company Exell. The prototype was made by Mobile Robotics Team in NASK under Janusz Będkowski BEng, PhD, DSc supervision.

The company has several ideas for control module's application. Modification of professional cleaning devices to make operator's work lighter is one of them. Another undeveloped area is patrolling building interiors. There are also some other possibilities of application, e.g. stocktaking during real estate development. Robots could make measurements around building site or during modernisation. It could be useful below the ground, in places dangerous for people – in mines.

We developed location system basing on various technologies: 3D laser measures, cameras, beacons and RFID", explains Będkowski. Lasers enable classic location with geometric measurements. Beacons are small radio transmitters, which send signals to robot and make it easier to locate. Additional passive tag is RFID. Robot recognizes also tags designated for daylight cameras. Image conversion algorithms make it possible to locate it with half a meter accuracy.

To make the system work one just needs to create a map, put tags on it and then insert robot into a building.

System is also ready to work in DIY devices and vehicles. Products available on the market have limited application because they are devoted for specific devices in particular branches of industry. In case of universal control module designed in NASK user gets the software and recommended system of sensors. Through the integration of innovative solution for example one thousand machines can be turned into autonomous robots operating in a certain limited scope. Authors assume that they would work in spacious buildings, like supermarkets or warehouses.