Team Information

Picture of vehicle:

INSPECTOR ROBOT SCOUT ROBOT EXPERT ROBOT

Name of vehicle: **Inspector robot, Expert robot, Scout robot**

Picture of team leader:

Name of team leader:	Piotr Szynkarczyk
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Team Description:	The Intelligent Mobile Systems Division (IMSD) is one of divisions of Industrial Research Institute for Automation and Measurements PIAP. Multi-disciplinary expert teams under the leadership of Dr. Piotr Szynkarczyk are capable of solving complex technological problems. This is

the factor which distinguishes PIAP among other companies operating in the field of gauging systems and industrial automatics. We continuously monitor the needs of the Polish economy and the world trends. On these grounds we launch research work in the field of new technologies and equipment. At present the PIAP work concentrates on the following areas: robotisation of work stands and process lines, automation of assembly, inter-operation transport systems, weighing and batching systems, visual inspection systems and mobile robots. Particular attention should be paid to the two last areas. Following years of work on visual systems we can now offer opportunities for no-touch precise measurement of details and evaluation of completeness and correctness of assembly and the quality of surface. Work on mobile robotics was the basis for developing anti-terrorist robots INSPECTOR and EXPERT, used i.e. by special forces of the Police in particularly dangerous assignments.

Inspector

Mobile platform has been adapted to operate on uneven surfaces and steep slopes. The inclination angle of the two front caterpillars can be changed to provide better stability in overcoming high barriers and on stairs. The power of the driving motors allows the robot to push forward or tow vehicles that weight 1500 kg irrespective of the gear they have been left on. The standard and additional equipment of the robot can be fixed at the mobile platform and manipulator.

The kinematical structure of the manipulator ensures constant spatial orientation of the object placed in the gripper, irrespective of the movement of other manipulator arms.

The portable control panel functions as an interface between the operator and the mobile robot. When disconnected from the operator's post, it can provide control of all robot functions.

Expert

The mobile platform has a elastic suspension that adjusts the shape of the caterpillar to the surface and provides uniform load distribution, which facilitates getting over curbs and slightly uneven surface as well as manipulation in confined space (airplanes, busses, carriages, ships). Specially designed structure of robot ensures its stability during operation, and also when negotiating of the obstacles. Manipulator's upper arm with the gripper can pull out in long distance (manipulator's range from the basement is 2900 mm). At manipulator can be fixed an X-ray device, recoil mechanism with laser sight for the disrupter, device for breaking car windows and others adapted to individual needs. Unit has got 6 cameras. All of them are integrated in common casings with twin halogen headlights (2 x 20W) or light-emitting diodes (LED). Remote **control console is mechanically resistant suitcase.**

Scout

The small-dimensional, fast and agile vehicle, that is able to perform remote inspection in dangerous or hostile terrain, in particular with limited space like clearance beneath the vehicle chassis or the space under bus seats. This robot represents a new approach to designing mobile counterterrorism robots – basic vehicle makes a platform upon that it can be assembled a specific equipment according to a current performed task. Such approach ensures obtaining both the low cost of the robot and simultaneously its high functionality.

The main part of the ScoutROBOT – its chassis – was designed as a small-overall dimensional vehicle, equipped with two cameras: the first rotational

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camera is placed at the front of the chassis, the second one – additional - at the rear. Both cameras are equipped with their own illuminators. Thanks to its small dimensions and lightweight design ScoutROBOT can be carried in a typical army rucksack. Its high speed and agility enables fast and remote recognition of the action place.

Sponsors:	None
Selection of scenario:	urban _X_ non-urban ___ UAV&UGV _X_ exhibition _X_ autonomous _X_
Proof of citizenship:	A copy of team leader passport will do (will not be published)!