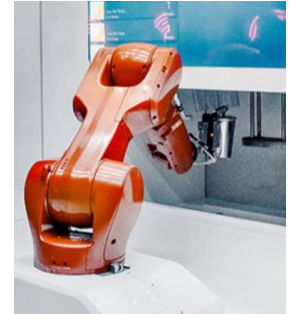


Autonomous Intelligent Robotic Platform

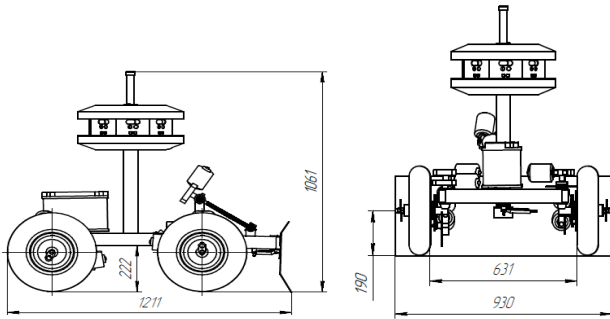
Perspectives of the development



Non-industrial robots have a big opportunity for developing

Unmanned ground vehicle developed by NSU

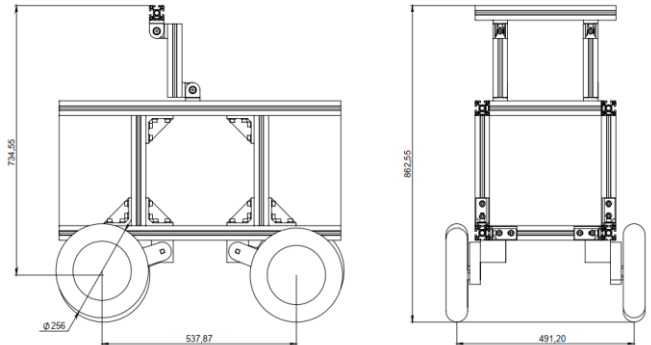
Autonomous robot assistant in yard



Attachable modules for:

- snow removal from a yard
- cleaning yard from foliage and garbage

Versatile autonomous robotic platform



Attachable modules for:

- transportation of documents in the office
- transportation of people or luggage at airports and stations
- goods transportation in warehouses
- launch of unmanned aerial vehicles

Unmanned ground vehicle in NSU

Autonomous robot assistant in yard

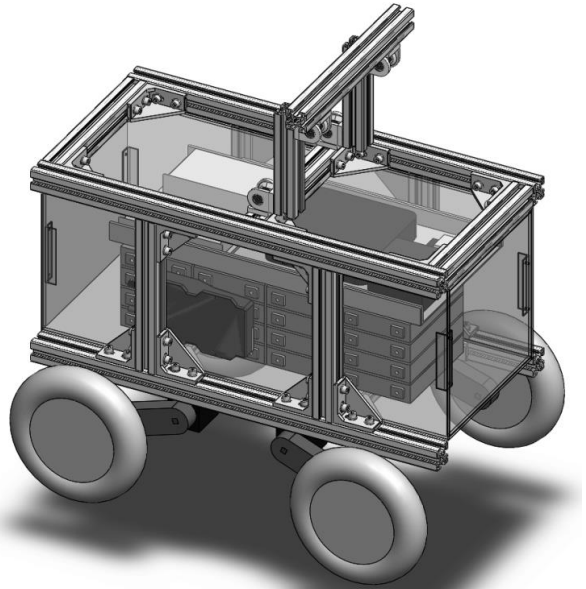


Russia Patent Autonomous mobile
robotic platform for snow cleaning

Priority 2019

Patent Owner Novosibirsk State
University (NSU)

Versatile autonomous robotic platform



The versatile autonomous robotic platform
at the stage of patenting

Core competences

- Machine learning technology
- Operation in autonomous and handled mode. Easy to operate.
- Automatic recharging from two to five hours
- Modular structure
- Operation in any weather conditions
- Robotic platform has small dimensions and can work in small spaces



Web cameras inside



Lidar Scanner



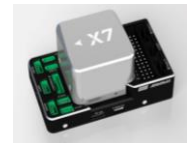
Car battery



Industrial computer inside



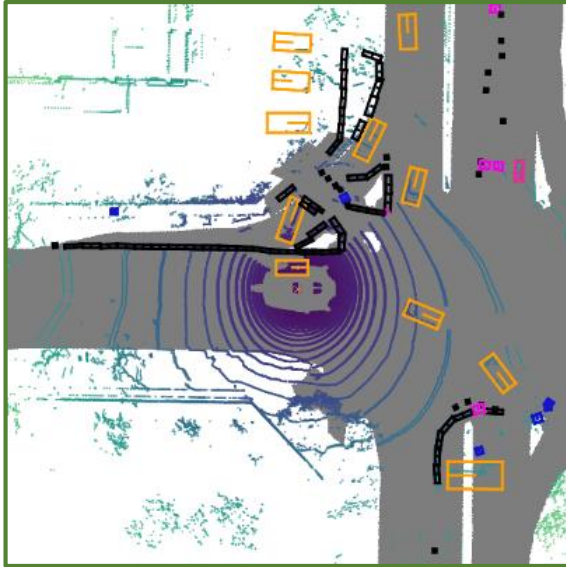
US/IR Sensors



Autopilot
CUAV X7

Basic components

Innovations and advantages

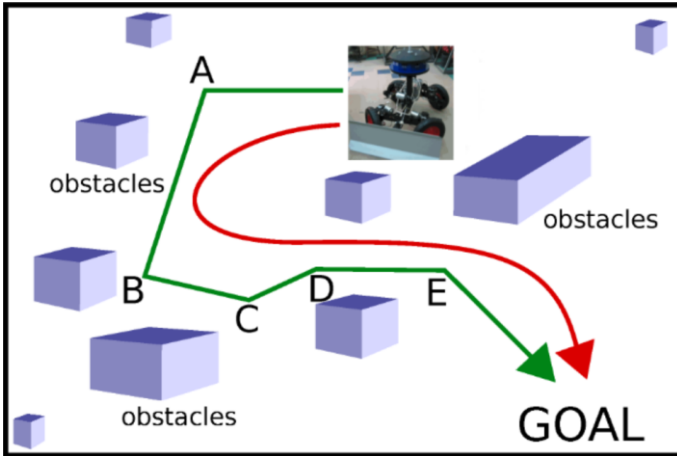


We use MMDetection3D as an open source object detection toolbox based on PyTorch.



The robot knows its yard by heart, works in any weather autonomously

Innovations and advantages



**Building an optimal route
for the robot**

Next steps



Integration of VR in robot control



Self-diagnostics

Key features

	Our product	OmiPlow (Russia)	Mini bulldozer, RoboPlow (USA)	YukiTaro (Japan)	SuperDroid (USA)
Dimensions, m	1x1x1	0,45x0,6x1,2	-	1,05x0,95 x1,58	1,6 (in long)
Weight, kg	100-200	100	450	400	178
Work duration on one charge	>3	<8	-	-	-
Automatic recharge	Yes	No	No	No	No
Working area, m	0.93	~1 M	1,3	0,95	1,32
Robot control	Autonomous and handled	Handled control	Handled control	Remotely, GPS navigation	Handled control
Price, US\$	~2500	~10000	~5000	~8500	~6500



Our plans

Integration of virtual and augmented reality

- remote control of robotic platform
- studying applied problems of human-operator interaction with mechatronic systems



Launching unmanned aerial vehicles (UAVs)

- monitoring of productive infrastructure, agricultural and forest land;
- geophysical aerial survey, aerial and video aerocartography;
- security, search and rescue operations



Cognitive development of robotics

- development of robotic intelligent assistants, collaborative robotics
- the development of algorithms for building modern methods of interaction between robots



Car parks

Collaborative robotics



Thank you for attention!