


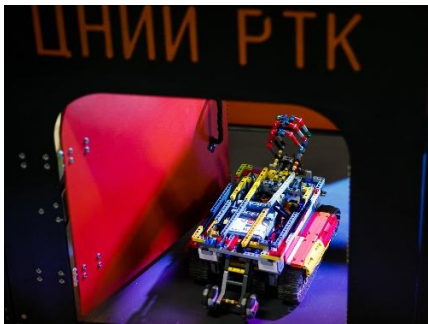
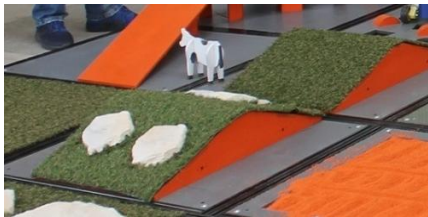





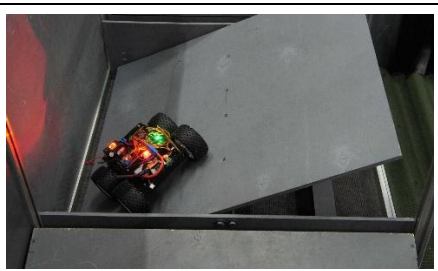

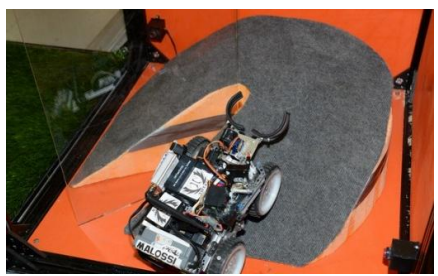
RTC Cup Scoring System


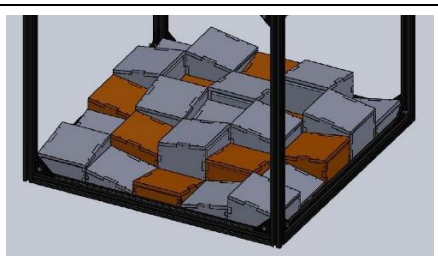
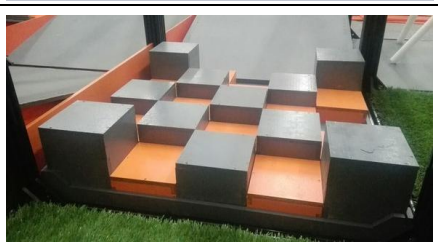
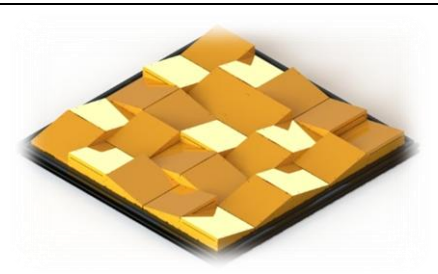
The scoring system and the conditions of task's execution. Autonomous action.


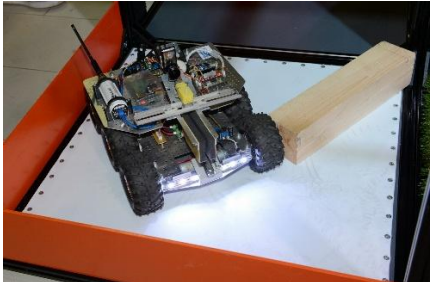

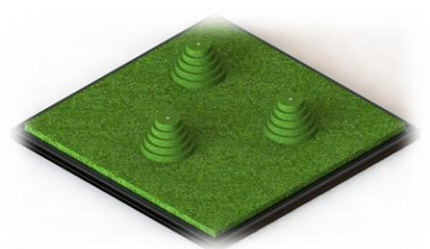
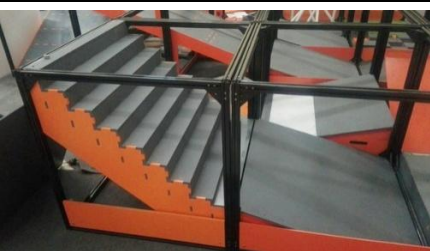
Table 1 - "Methods of execution and scoring points number"

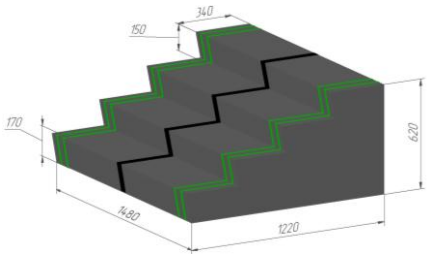


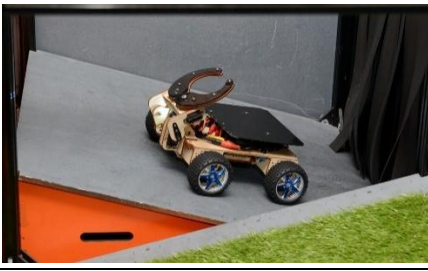
Picture	Section	Execution	Points	Elevator	Location
	Ball pool	Passing through	80	Yes	1 floor
	Logs	Passing through	100	Yes	1 floor
	Wood Pile	Passing through	170	Yes	1 floor



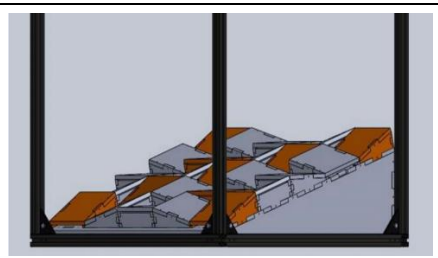
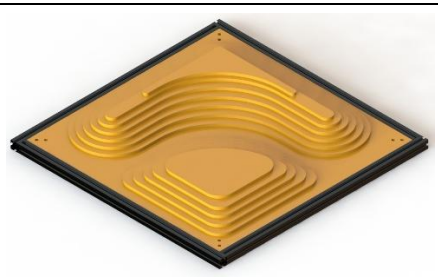
Picture	Section	Execution	Points	Elevator	Location
	Door: inward	Opening door inward and travel through	60		1 floor
	Door: outward	Opening door outward to the latch and travel through	15		1 floor
	Narrow slope 15 ° grass / stones	Passing through	45		1 floor
	Blockage	Passing through	50		1 floor
	Stone slope 15 °	Passing through	45		1 floor


Picture	Section	Execution	Points	Elevator	Location
	Stones	Passing through	30		1 floor
	Seesaw	Passing through along the axis. Allowed ride / check back on the swing	60	Yes	1 floor
	Expanded clay	Passing through	30		1 floor
	Hoof	Passing through	45		1 floor

Picture	Section	Execution	Points	Elevator	Location
	Align ramps	Passing through	35		1 floor
	Align ramps-2	Passing through	90	Yes	1 floor
	Straight ramps	Passing through	80	Yes	1 floor
	Agro ramps	Passing through	40		1 floor

Picture	Section	Execution	Points	Elevator	Location
	Roof	Passing through	35		1 floor
	Ice	Passing through	25		1 floor
	Ice slope 15 °	Passing through	40		1 floor
	Forest	Passing through	50		1 floor
	Mini staircase: climb	Climb up in any way	300	Yes	1 floor
	Mini staircase: descend	Climb down in any way	70	Yes	1 floor

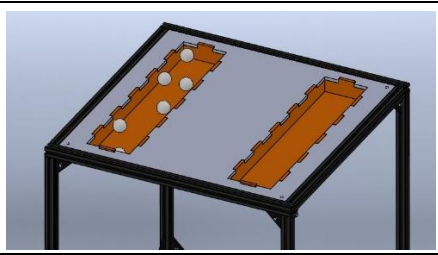



Picture	Section	Execution	Points	Elevator	Location
	Staircase: climb	Climb up in any way	500	Yes	1 floor
	Staircase: descent	Climb down in any way	90	Yes	1 floor
	Staircase: autonomus climb	Autonomous line following	1000	Yes	1 floor
	Staircase: autonomus descent	Autonomous line following	270	Yes	1 floor
	Mines deactivation	Mine deactivation (the robot should not touch the mines)	50	Yes	1 floor
	Mines safe pass	Passing through (without deactivation)	35		1 floor
	Inclined surface 15 °	Climb / descent	15		1 floor
	Inclined surface 20 ° (2 cells)	Climb / descent	30		1 floor





Picture	Section	Execution	Points	Elevator	Location
	Inclined surface 20 ° (2 cells): autonomous	Autonomous line following	90	Yes	1 floor
	Inclined surface 30 ° (2 cells)	Climb	50	Yes	1 floor
	Inclined surface 30 ° (2 cells)	Descent	30	Yes	1 floor
	Inclined surface 30 ° (2 cells): autonomous	Autonomous line following	90	Yes	1 floor
	Inclined surface with ramps	Passing through	50	Yes	1 floor
	Canyon	Passing through	60	Yes	1 floor


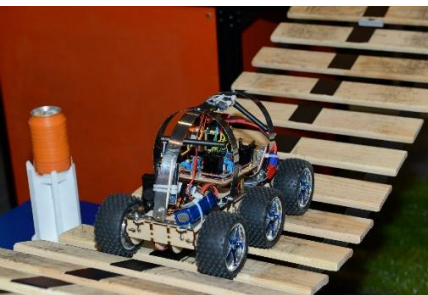

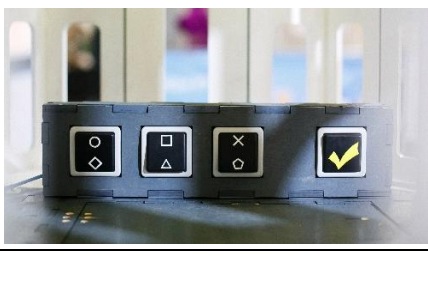

Picture	Section	Execution	Points	Elevator	Location
	Pit	Passing through	60		1 floor
	Sand	Passing through	40		1 floor
	Foam under the Hatch	Passing through	15		1 floor
	Wires	A box with a bunch of "wires". Passing through	55		
	Ragged road	Passing through	80		
	Rails	Passing through	60	Yes	1 floor


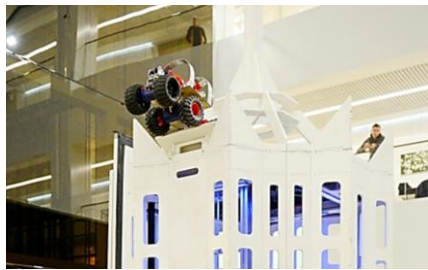

Picture	Section	Execution	Points	Elevator	Location
	Broken floor	Passing through	35		1 floor
	Ribs	Passing through	45		1 floor
	Rolling pipes	Passing through	30		1 floor
	Net	Passing through	35		1 floor

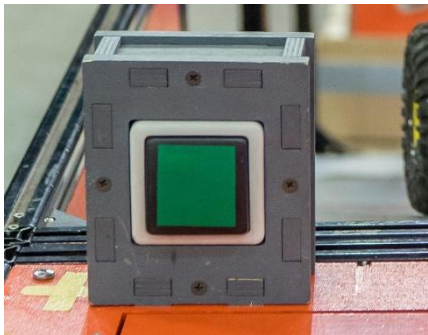





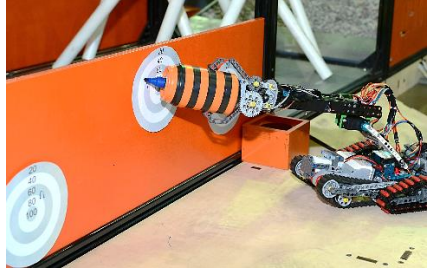


Picture	Section	Execution	Points	Elevator	Location
	Steps with pipes	Passing through	55		1 floor
	Sand Slope	Passing through	75	Yes	1 floor
	Gravel Slope	Passing through	65		1 floor
	Grass	Passing through	10		1 floor
	Grass slope 15 °	Passing through	25		1 floor

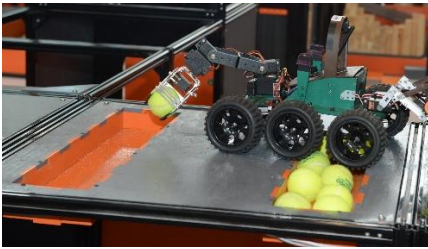
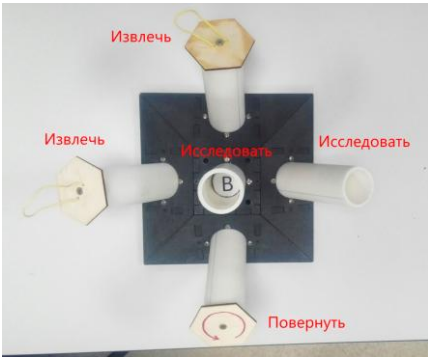
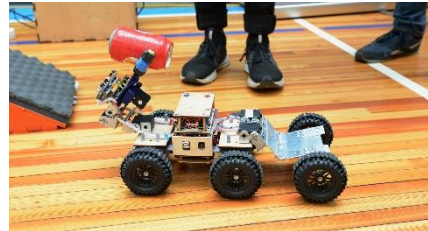
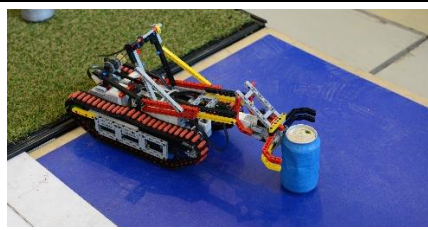
Picture	Section	Execution	Points	Elevator	Location
	Trench	Passing through	40		1 floor
	Swamp	Passing through	60	Yes	1 floor
	Fog (1 cell)	Passing through	35	Yes (For 3 cells)	1 floor
	Fog: light button	Press a button to light up the cell	30		1 floor

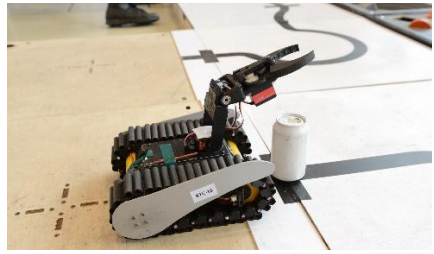


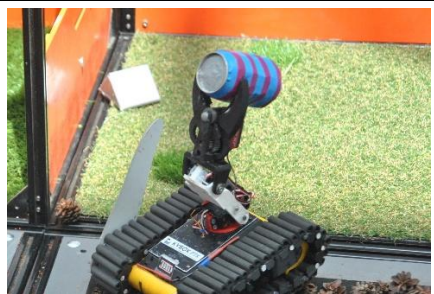
Picture	Section	Execution	Points	Elevator	Location
	Spikes	Passing through	65	Yes	1 floor
	Pine cones	Passing through	30		1 floor
	Hypno disk	Passing through	80	Yes	2 floor
	Flag capture: the button	Press a button to light up the Tower	30		2 floor
	Flag capture	The Tower glows your color at the end of the attempt	150		2 floor

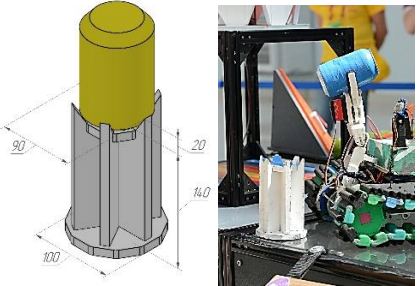
Picture	Section	Execution	Points	Elevator	Location
	Hatch	Activating the Hatch to open	40	Yes	2 floor
	Suspension bridge	Passing through	40		2 floor
	Suspension bridge: punctured line	Autonomous line following	120	Yes	2 floor
	Tile with line: black on white	Autonomous line following	50	Yes (for 2 tiles)	2 floor
	Elevator: combination lock	Enter combination using buttons and activate the Elevator	50		Tower






Picture	Section	Execution	Points	Elevator	Location
	Elevator: lift up to the 4th floor of the Tower	Lifting up to the top floor of the Tower on the platform of the Elevator	300		Tower
	Elevator: descent from the Tower	Descend down from the top floor of the Tower to the 2nd by pressing the button	40		Tower
	Basement (1st floor of the Tower)	Escape from the basement of the Tower	30		Tower
	Trust Fall: free fall	Jump from the top floor of the Tower	150		Tower
	Trust Fall: controlled descent	Descent from the Tower in any way (except elevator or free fall)	300		Tower
	Trust Fall: robot keep on moving	The robot keep on moving without repair	300		Tower
	QR codes	Reading code: By robot (decryption of the code appearing on the operator screen). Pass as an autonomic action By smartphone from the operator screen image	60 35		

Picture	Section	Execution	Points	Elevator	Location
	Manipulation tasks:				
	Any button	Pressing any button with manipulator (robotic arm)	30-50		
	Valves	Rotate 90° Lever  Wheel  Stub S  Stub M 	100 110 120 120	Yes	1 floor
	Target	Touch round target with the marker. Best result score. Marker is embedded in the can.	100 80 60 40 20		1 floor
	Shatters: capture	Capture one shatter	40	Yes, 3 pc	
	Shatters: delivery	Deliver one shatter	30	Yes, 3 pc	

Picture	Section	Execution	Points	Elevator	Location
	Trench: ball capture	capture a ball from a trench	50	Yes	
	Trench: ball delivery	put a ball into second trench	30		
	Pipes: extract	Extract one pipe	50		1 floor
	Pipes: explore	Exploring a pipe operator should be able to see clearly the image inside	50		1 floor
	Pipes: rotate	Rotate the pipe on 180 ° Rotate the pipe on 360 °	90 120	Yes, 1 pc (for 360°)	1 floor
	Pipes: touch	Touch the center of a round target with the marker.	20-100		
	Standard beacon (can): capture	Capture, lift (no less than 2 cm high) and hold (no less than 1 sec long) a can	30		
	Standard beacon (can): delivery	Deliver a can to a field with according color	60		
	Standard beacon (can): autonomous capture	Capture a can autonomously	90	Yes	

Picture	Section	Execution	Points	Elevator	Location
	Auto beacon (can): autonomous capture	Capture a can, standing on the line, autonomously	60	Yes	
	Auto beacon (can): autonomous delivery	Deliver a can on next line “crossroad” autonomously	80	Yes	
	Special beacon (can): capture	Capture, lift (no less than 2 cm high) and hold (no less than 1 sec long) a can	50	Yes	
	Special beacon (can): delivery	Deliver a can to a field with according color	80	Yes	
	Special beacon (can): autonomous capture	Capture a can autonomously	150	Yes	
	Heavy beacon (can): capture	Capture, lift (no less than 2 cm high) and hold (no less than 1 sec long) a can	60	Yes	

Picture	Section	Execution	Points	Elevator	Location
	Heavy beacon (can): delivery	Deliver a can to a field with according color	90	Yes	
	Heavy beacon (can): autonomous capture	Capture a can autonomously	120	Yes	
	Mini-tower beacon (can): capture	Capture, lift (no less than 2 cm high) and hold (no less than 1 sec long) a can from the “mini-tower stand	70	Yes	
	Mini-tower beacon (can): autonomous capture	Capture a can autonomously from the “mini-tower stand	140	Yes	

Penalties:					
	Penalty: attempt reschedule	For rescheduling the attempt until later time. Can be done only once	-50		
	Penalty: repair time-out	For touching the robot for repair or relocation (if it stuck). Can be done only once	-70		
	Penalty: lost robot parts	For losing parts during the attempt. Condition: a part should come loose fully from the robot. Can be done multiple times	-30		
	Penalty: touch to enter automode	For touching the robot (pressing the button) to enter automode. Can be done twice	-10		
	Penalty: the robot explodes on a landmine	The robot explodes on a landmine (light flashes). Can be done thrice	-50		1 floor