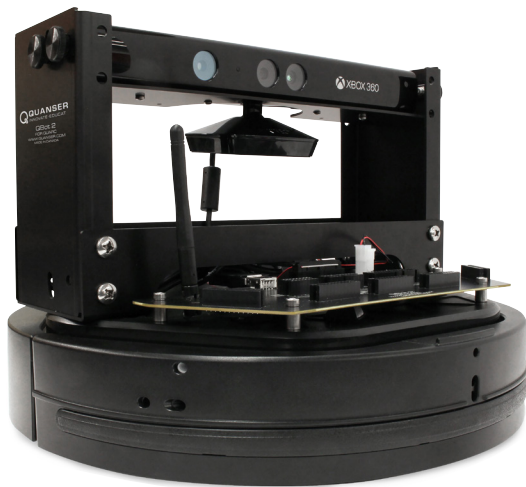


QUANSER QBot 2 for QUARC

High-performance Robot for Indoor Labs

The Quanser QBot 2 for QUARC is an innovative open-architecture autonomous ground robot, built on a 2-wheel mobile platform. Equipped with built-in sensors, a vision system, and accompanied by extensive courseware, the QBot 2 is ideally suited for teaching undergraduate and advanced robotics and mechatronics courses. The open-architecture control structure allows users to add other off-the-shelf sensors and customize the QBot 2 for their research in areas such as: vehicle navigation and control, autonomous vehicles control, machine learning and computer vision, artificial intelligence high-level control architecture of mobile robots, swarm robotics, and more.

Features



All-in-One

Compact system with curriculum with independent exercises for robotics and mechatronics courses included.



Ready to Use

Wide range of sensors included (bumper sensor, wheel drop sensor, cliff sensor, 3-axis gyroscope, kinect RGBD sensor).



Customizable

Ability to add off-the-shelf sensors supported by QUARC, including digital (SPI, UART, I²C sensors) and analog sensors.



Open

Open architecture design with fully documented system models and parameters provided.

Courseware

Curriculum Topics

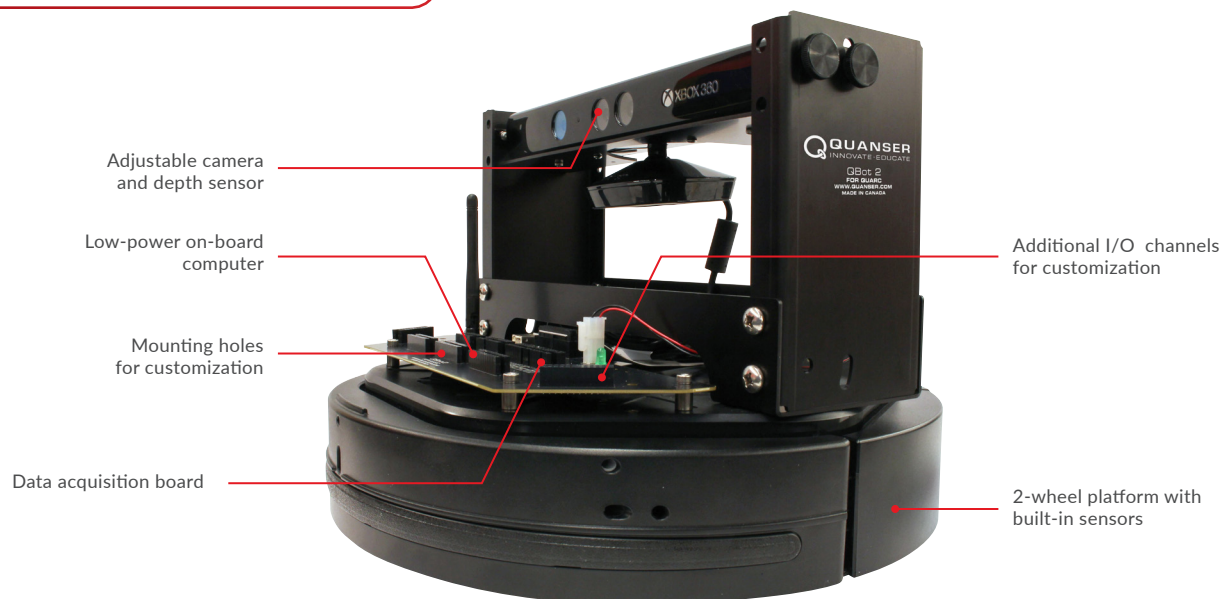
- Differential drive kinematics
- Forward and inverse kinematics
- Dead reckoning and odometric localization
- Path planning and obstacle avoidance
- 2D mapping and occupancy grid map
- Image acquisition, processing and reasoning
- Simultaneous localization and mapping (SLAM)
- High level control architecture of mobile robots
- Vision-guided vehicle control

Resources for Robotics and Mechatronics Courses

The QBot 2 for QUARC comes with Quanser-developed courseware materials covering standard topics for undergraduate and graduate robotics and mechatronics courses, including differential and inverse kinematics, odometric and probabilistic map-based localization, path planning, mapping and vision-guided control.

The laboratory exercises are organized in a set of independent modules, allowing professors to select and adapt them easily for an existing course, or build a new course.

Product Details



Device Specifications

Platform	2-wheeled Kobuki base from Yujin Robot	
QBot 2 diameter	35 cm	
QBot 2 height (with Kinect mounted)	27 cm	
Maximum linear speed	0.7 m/s	
Available payload	App. 4.5 kg	
Battery life	3 hours	
On-board computer	Gumstix DuoVero Zephyr with integrated 802.11 b/g/n WiFi	
QUARC maximum sample rate	1,000 Hz	
Camera resolution	640 x 480	
Depth sensing	11 bit	
Depth sensor range	0.5 - 6 m	
On-board sensors	3 digital bump sensors	2 wheel encoders
	3 digital wheel drop sensors	2 programmable LEDs
	3 cliff sensors	3 digital buttons
	3-axis gyroscope	2 over current sensors
	2 analog motor current sensors	1 battery voltage sensor
	1 Z-axis angle measurement (heading)	1 Kinect® RGBD sensor
Additional I/O channels available	8 reconfigurable digital I/O channels	1 SPI bus channel
	4 analog input channels	1 I ² C serial bus channel
	2 encoder input channels	
	4 PWM output channels	
	1 UART serial port (interface 3.3 V serial device)	

About Quanser:

Quanser is the world leader in education and research for real-time control design and implementation. We specialize in outfitting engineering control laboratories to help universities captivate the brightest minds, motivate them to success and produce graduates with industry-relevant skills. Universities worldwide implement Quanser's open architecture control solutions, industry-relevant curriculum and cutting-edge work stations to teach Introductory, Intermediate or Advanced controls to students in Electrical, Mechanical, Mechatronics, Robotics, Aerospace, Civil, and various other engineering disciplines.

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