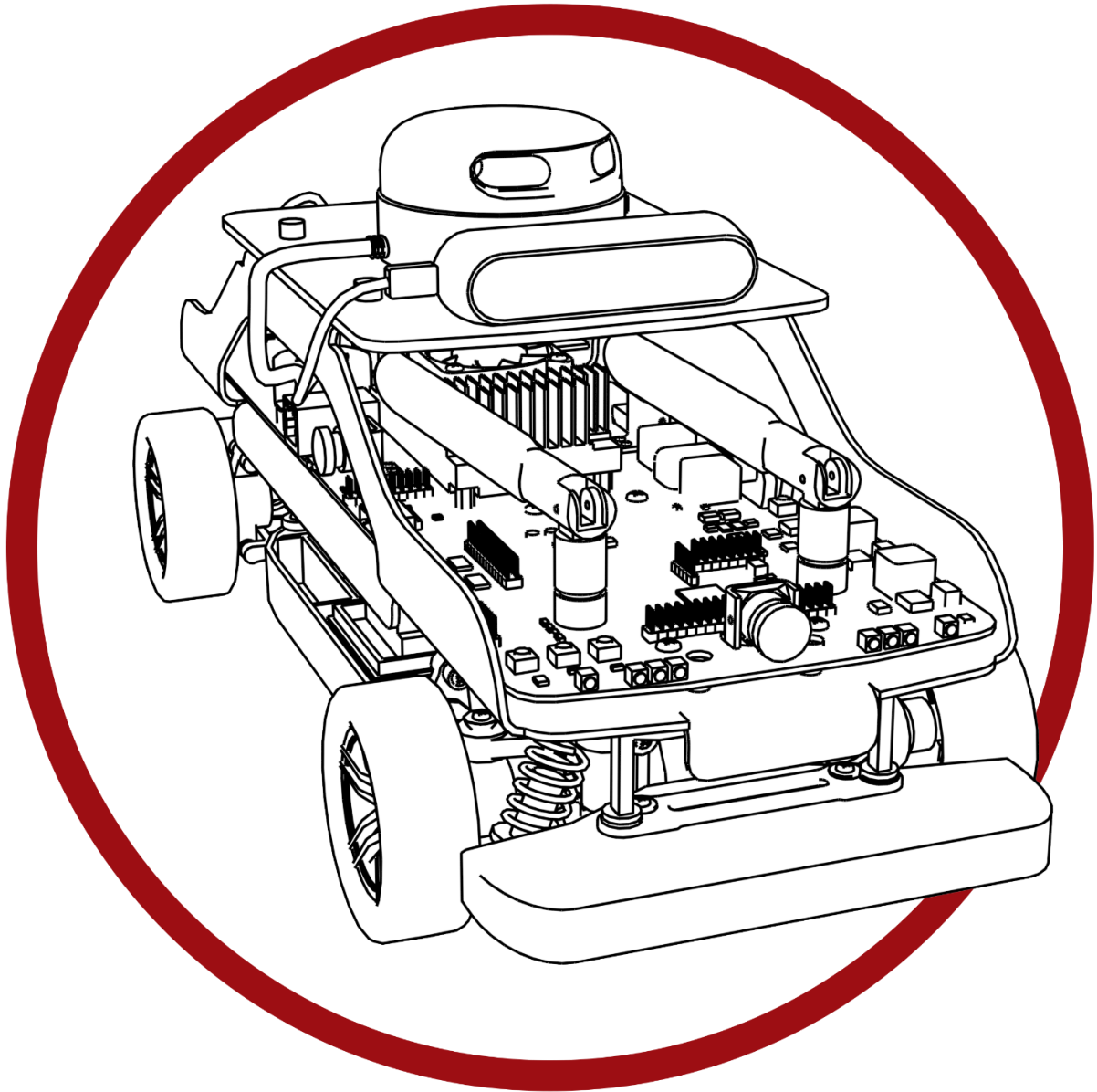# Self-Driving Car Research Studio

Change Log

Latest Documentation and Controllers

For the latest documentation and controllers, please visit Self-Driving Car Research Studio.

2021-12-06

- Added more details in the ROS-Python Hardware Tests documentation. Added an alternate path to running ROS nodes individually.

2021-12-03

- Added missing C++ header files required for compiling ROS C++ examples. Full set found under Core Modules\ROS-Cpp\C++libraries
- Updated readme.txt found under Core Modules\ROS-Cpp for configuring the ROS C++ nodes
- Included package.xml in Core Modules\ROS-Cpp

2021-11-01

- Added camera extrinsic matrices for the QCar cameras to the Hardware User Guide.

2021-07-12

- Updated the QUARC example HIL block with new defaults for improved IMU performance. Please see the HIL board-specific options to change the default values.
- Added an IMU Heading Estimation example in the Simulink Applications
- Removed references in to finding the device number in the gamepad subsystems in the Simulink models. Unless there is more than one USB receiver plugged in, the joystick number should always be 1.

2021-04-19

- **NOTICE:** Users need to update QUARC before downloading the new content resources. QUARC updates include:
  - Changes to the 2D camera interfaces in Python
  - Changes to joystick interfaces in Python and Simulink
  - Changed the default scaling for the onboard gyro
  - Bug fixes for writing custom messages to the QCar LCD screen
  - Please see **VII – Customizing your QCar** for instructions on upgrading the QCar QUARC target and onboard Python API's.
- Added the regulatory statements to the user manual.

- Updated **q_essential.py** to adapt the change from the Multimedia API on **Camera2D** class.
- Added new functions in **q_interpretation.py**.
- Switched LIDAR measurement mode to **NORMAL** mode and used **heading** to obtain angles data on both Simulink and Python.
- Added new Python application **Analytical Lane Following.**
- Removed process to get the joystick/gamepad event number. Now unless there are more than one USB receivers plugged in, the number should always be 1.
- Renamed the Simulink Autonomous Driving example as Simulink Autonomous Driving Example 2, and added a simplified Example 1 with additional diagnostic information to provide greater understanding for the underlying components at the expense of performance.
- Added notes to VNC communication using an HDMI dummy instead of connecting a monitor

2021-02-18

- Added RPLidar A2M8 datasheet to the support documentation folder
- Added labels for the reset and recovery buttons in the hardware description. The recovery button should never be used unless instructed by Quanser.
- Added a new guide **VII – Customizing your QCar** to provide users direction on making custom changes to mechanical, electrical, and software elements of the QCar.
- Added estimated charging time to the **II – Power** guide
- Removed CmakeLists.txt from the ROS localization folder which was causing a build failure
- Added a Python lane following example in the applications folder

2020-12-10

- Added details to the Connectivity guide to help users choose the best remote connection technique for their application.
- Added how to enable auto-login to the **VIII - Troubleshooting** guide
- Added support for the IR video streams in the `q_essential.py` and a new example `Hardware_Test_IntelRealsense_IR.py`

2020-11-20

- New change log.
- Updated documentation formatting and cover images.
- Relocated Quick Start Guide to the root folder.
- Updated charging instructions in the **II – Power** user guide to reflect the operation of the EV-Peak charger included with the QCar.
- Additional Simulink troubleshooting tips.

- A significant reorganization was made to the ROS content. All the common code has now been moved to the **Core Modules/ROS-Python** folder. The hardware tests and applications ROS folders now contain only the code applicable to the specific examples

which is to be merged with the common code base as needed. All the ROS guides have been updated to reflect these changes.

- ROS C++ libraries have been added to **Core Modules/ROS-Cpp**. These libraries are intended for advanced users. No C++ examples have been included yet and technical support for these libraries will be limited.
- Added a ROS-to-ROS Communication document in the **Supporting Documentation** folder to guide users on creating a mixed ROS 1 & ROS 2 environment.

- The Simulink Manual Drive application example had incorrect board options preventing the model from running. The default options were restored. In addition, a pre-scaler was added to the throttle command to better map the joystick throttle to the motor voltage and make it easier to control.

- The Simulink Autonomous Driving application example had incorrect board options preventing the model from running. The default options were restored.

2020-11-04

- Bug fixes to ROS and python core module.

2020-10-23

- Added instructions to **III – Connectivity** for connecting to the QCar using VNC viewer.
- Added Simulink documentation and example for automated lane following
- Updated ROS documentation and example for running from a Windows PC and saving ROS info

2020-07-22

- First public release of the content material
- All Simulink beta code was updated to R2019a format and tested against QUARC 2020 SP1 (4.0.3123 – 2020-07-14)
- All Python examples were tested against Python 3.7
- All ROS examples were tested against Melodic

QUANSER
INNOVATE · EDUCATE

Solutions for teaching and research. Made in Canada.