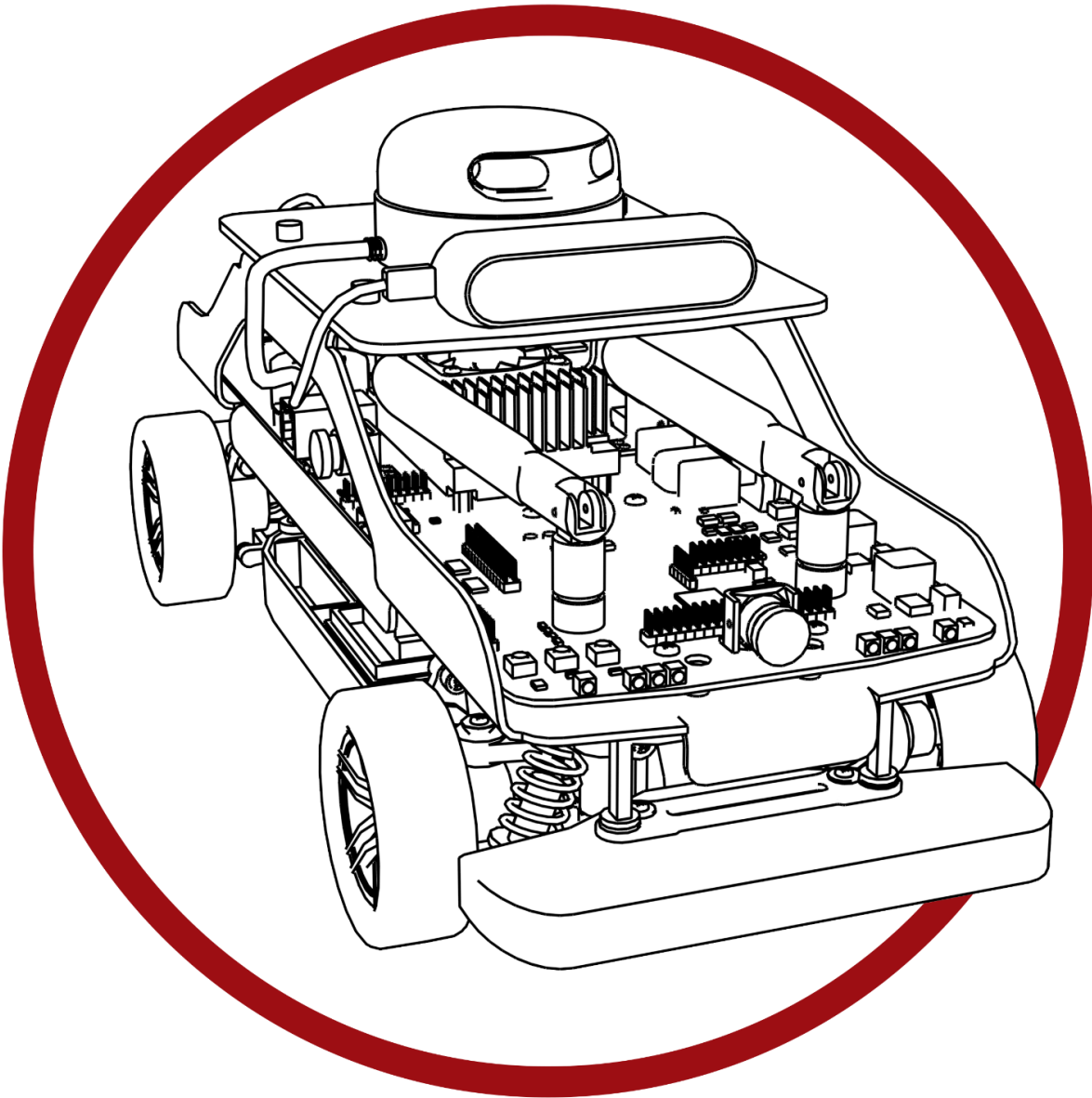QUANSER
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Self-Driving Car Research Studio
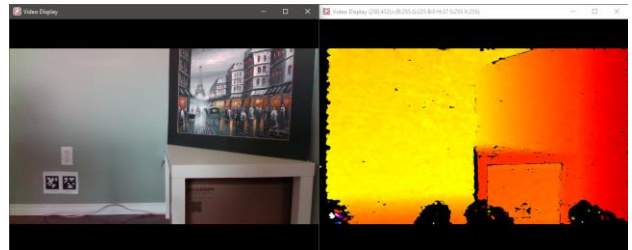

Hardware Tests - Simulink

V 1.1 (November 2020)

Intel RealSense, RPLidar A2, CSI cameras and I/O

1. Use a charged battery to power the QCar platform.
   Note: Check the user guide **II - Power** for information on this.

2. Use a quick ping test to ensure that you are connected to the QCar platform.
   Note: Check the user guide **III - Connectivity** for setting up a remote Wi-Fi based connection with the QCar.

3. Run the individual hardware test models one at a time. Ensure that the IP address in the **MEX-file arguments** of the **Code Generation > Interface** tab of the **Model Configuration Settings** matches that of your platform.
   Note: Check the user guide **IV - Software - Simulink** for information on how to configure and deploy Simulink models to the QCar target.

4. The expected behaviour is as follows:

   a. Intel_Realsense.slx
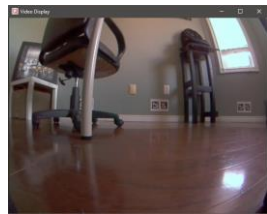   This model should launch an RGB and Depth video display on your screen. An example output is shown here (RGB on left, Depth on right).

      If your depth display looks monotonous, try reducing the **Maximum pixel value** parameter in the **Image Transform** block inside the **depthDisplay** subsystem.
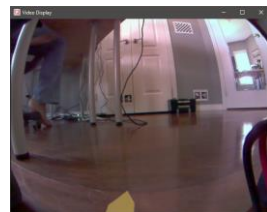
   b. CSI_Cameras.slx
      This model should display one CSI image in a video display on your screen depending on the camera ID constant (0 to 3) in the model's root level. A sample output is shown below (in order, 0 - right, 1 - rear, 2 - left and 3 - front camera).
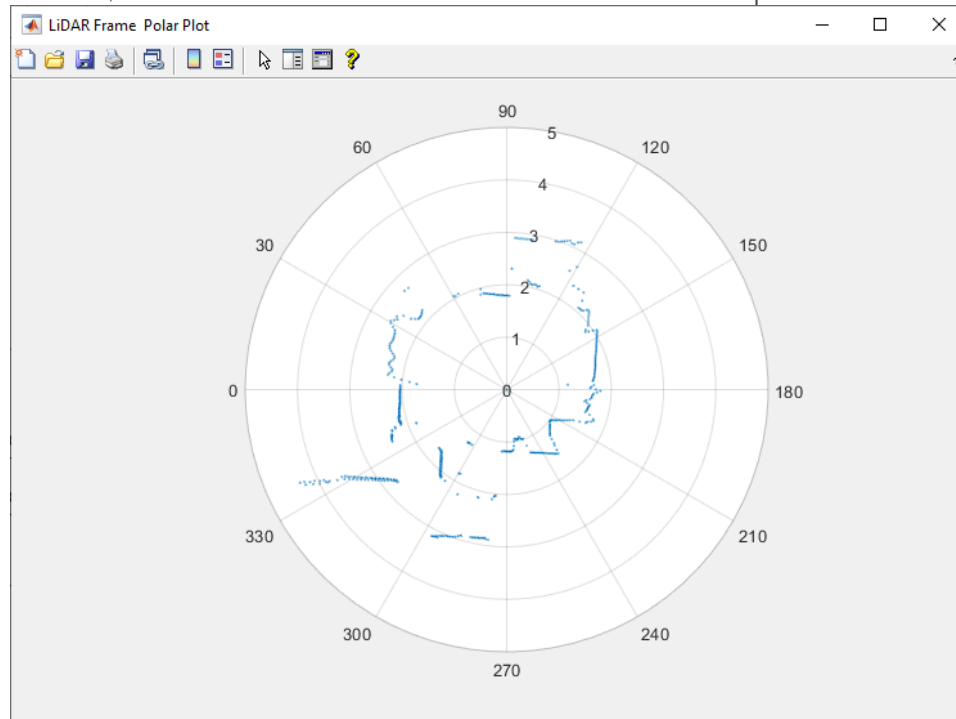

c. **RP_LIDAR_A2.slx**
   This model should display a polar plot of the LIDAR scans. A sample output is shown here. Note that the 0 degree mark corresponds to the front of the vehicle, and the data is scanned in a counterclockwise positive direction.

d. **Basic_IO.slx**
   This model should let you command the throttle and steering motors and write high (**1**) or low (**0**) values to the 8 LEDs. In addition, you can also read the motor current, battery voltage and motor speed. You should see the wheels spin forwards for a positive throttle, and the front wheels steer towards the left for a positive steering (resulting in counterclockwise rotation).