

**Autonomous Vehicles Research Studio**

Setup Guide – Introduction

Logo

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| caution.png **Caution** | **This equipment is designed to be used for educational and research purposes and is not intended for use by the public.** The user is responsible to ensure that the equipment will be used by technically qualified personnel only. While the end-effector board provides connections for external user devices, users are responsible for certifying any modifications or additions they make to the default configuration. |

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# A. What’s Covered?

This series consists of steps that will ensure that your **Autonomous Vehicles Research Studio** is fully set up and functional. There are numerous checkpoints during the process to improve the workflow. Ensure that each step is followed carefully. You can track your progress reading each guide and completing each checkpoint using the checklist in the table below.

Go through this guide and the steps in order for the first time setting up the studio. Always start with the word document, if there is software you need to run, the guide will walk you through it. If you only have one type of vehicle, certain guides are separated by vehicle, for example step 2 – batteries. You only have to read the one referring to your vehicle.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Step | Section / Step | Read? | Checkpoint | Done? |
| 1 | Workspace with Nets & Mats |  | Setup Picture |  |
| 2 | Vehicle Batteries |  | No | N/A |
| 3 | Mount OptiTrack Cameras |  | Camera Setup Picture |  |
| 4 | Ground PC Setup |  | PC Connection Picture |  |
| 5 | Software Licensing and Testing |  | Sine Scope Demo |  |
| 6 | Joystick Testing |  | Visualization Demo |  |
| 7 | Router – PC Connection |  | No | N/A |
| 8 | Vehicle Communication |  | TCP/IP Demo |  |
| 9 | Camera Orientation |  | Reference View Screenshot |  |
| 10 | Camera Calibration |  | Captured Volume Screenshot |  |
| 11 | Rigid Body Definition |  | Optitrack Visualization Demo |  |
| 12 | Vehicle I/O Check |  | IO/Check |  |
| 13 | QDrone 1/2 Hover Test |  | Hover Test |  |

# B. File Naming Scheme and Length Limits

The autonomous vehicle examples are separated by product. For more recent products, like the QDrone 2, Simulink files are named as follows:

shortenedProductName\_File\_associatedExample\_fileMatlabVersion.slx

So for example, the QDrone 2(product) Mission Control (File) for Position Control (example), saved in MATLAB/Simulink 2021a is named **QD2\_MissionCtrl\_Position\_2021a.slx**

Windows requires that the path for files are shorter than 256 characters, so file names were shortened due to this limit. However, Simulink will need files from folders that will get generated when building the file and path limits could still be exceeded.

If you try to build a file and the Diagnostic Viewer returns an error due to path length, move the folder where your file is located somewhere else in your computer that will create a shorter path length.

So for example, if the file you are trying to run is located in the folder

C:\Users\yourName\Documents\QUANSER\examples\autonomous\_vehicles\multivehicle\swarm\_qdrone\_1\non\_toolchain\swarm\_qdrones\2qdrones

Move the folder perhaps to

C:\Users\yourName\Documents\swarm\_qdrone1\2qdrones

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