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Guides and Resources: Hardware - QDrone

Localization Markers

This document provides rigid body configurations for the QDrone for use with a localization system.

Configuring a rigid body with the Qdrone and Motive

Getting the Motive software to track the QDrone involves 2 steps.

1. Placing markers on the vehicle (rigidly attached to the vehicle) so that the cameras can see the vehicle
2. Tagging the rigid body configuration in Motive, so that it knows what the QDrone look like

For step 1, we have provided 10 examples of unique configurations for the QDrones (Figure 1). In case you want to use your own configurations, note the following important considerations. See the Research Studio Setup Guide for information on step 2.

Note: The marker configurations for each rigid body operating within the workspace simultaneously must be unique in order for the Motive software to be able to clearly identify one rigid body from another.

Note: It is recommended that five or more markers be used per vehicle. This adds redundancy leading to higher robustness because Motive will be less prone to losing tracking due to markers being obscured. This also reduces the chance that the solution to the pose estimates may be interchanged/confused amongst vehicles.

Note: The placement of the markers on the rigid body must be such that the pattern is NOT symmetric about any arbitrary plane, as it may result in aliasing. For example, placing four markers in a square configuration would lead to ambiguous orientation solutions in 90° intervals. This would make it impossible to discern 90° rotations.

Note: Make use of different heights when placing markers; for example, placing a marker on the QDrone's handle as well as top frame. The threaded markers can be secured to the QDrone via the pre-drilled holes on the top frame using M3 screws (the markers themselves act as the nuts).

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Figure 1: 10 examples of unique QDrone marker configurations