Receiving Vicon Motion Capture Data via ROS 2 and Fast DDS

Mohammad Nomaan Husain

1 Introduction

This guide describes how to configure a ROS 2 node to receive motion capture data from a Vicon system over a network using Fast DDS. The setup involves two machines:

- The **Vicon PC**, which is configured to publish motion capture data.
- The **Receiver PC**, which subscribes to this data using the ros2-vicon-receiver package.

2 Prerequisites

Ensure the Fast DDS Discovery Server is properly configured and running, as explained in the Fast DDS setup guide. All participating machines should source the correct setup script pointing to the discovery server.

3 Setup Instructions

3.1 Step 1: Clone the Vicon Receiver Package

On the Receiver PC, clone the ROS 2 Vicon receiver package from the `humble` branch:

```
git clone -b humble https://github.com/einstein07/ros2-vicon-receiver.git
cd ros2-vicon-receiver
colcon build
```

3.2 Step 2: Source ROS 2 and the Package

Source your ROS 2 workspace and the built Vicon receiver package:

```
source /opt/ros/humble/setup.bash
source install/setup.bash
```

3.3 Step 3: Configure the Vicon IP Address

Find the IP address of the Vicon PC by running `ipconfig` (on Windows), and update the Vicon receiver launch file accordingly:

- Open: `vicon_receiver/launch/client.launch.py`
- Replace the placeholder IP address with the actual IP of the Vicon PC (e.g., `134.34.231.219`)

3.4 Step 4: Source the Fast DDS Setup

Before launching the Vicon receiver, source the Fast DDS discovery setup script on the Receiver PC that was created for the Fast DDS server:

```
source setup-ros2-discovery.sh
```

3.5 Step 5: Launch the Vicon Receiver

From the Vicon receiver package directory, run:

```
ros2 launch vicon_receiver client.launch.py
```

3.6 Step 6: Verify Topics

Open a new terminal, source ROS 2 and the Fast DDS server setup script, and list topics:

```
source /opt/ros/humble/setup.bash
source setup-ros2-discovery.sh
ros2 topic list
```

You should now see topics being published by the Vicon system for each tracked object.

4 Notes

- Ensure all ROS 2 environments are correctly sourced and pointing to the Discovery Server.
- If using a different workspace structure, adjust paths accordingly.

5 Conclusion

With this configuration, Vicon motion capture data can be received over a ROS 2 network using Fast DDS. This enables integration of Vicon tracking into robotic systems or real-time monitoring applications with ROS 2.