Manual

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QUICKSTART

Vicon tracker

Vicon tracker is a Windows software provided by Vicon to track infrared marker and reconstruct a 3d pose at a maximum frame rate of 240Hz. The software runs a VRPN server that is able to live stream the pose updates to a distant machine through TCPIP socket communication. The tracker software is installed on the Dell Inspiron computer and can be launched using the shortcut on the Windows 10 desktop.

RPIt interfacing

RPIt can interface with the Vicon tracker software using them IO socket block. A dedicated server runs on the target and works as a VRPN client as well as a RPIt IO socket server. It is launched automatically at the end of the target boot. It can be accessed with a local socket using address 127.0.0.1 in the RPIt IO socket block.

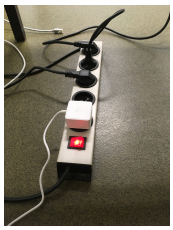
Measurements

The Vicon Tracker IO socket block has one input port and one output port. Both are 10x1 vectors. The inputs are ignored while the outputs contain the following measurements:

- 3x1 vector defining the translation coordinates of the target;
- 4x1 vector defining the quaternion of the target pose;
- 1 scalar defining the timestamp expressed in seconds.

QuickStart procedure

- Power on the Dell Inspiron and the POE switch by turning on this multi-outlet:



- Log in to the AVR account on the PC. The password is the classical one where the % at the end is replaced with a $.
- Start the Tracker software. After about 1 minute, it will automatically detect the Vicon cameras and start tracking the target. The default target is the wiimote.
- Boot the Raspberry Pi. The RPI will automatically connect to the C138 hotspot and configure a static IP address for its WiFi adapter on this local subnet: 192.168.10.20

- In the home directory of the “pi” account there is a README file explaining how to connect the RPI to the internet. Indeed, the subnet 192.168.10.0 is isolated from the internet to minimize transmission delays. The Dell Inspiron ethernet adapter has the address 192.168.10.1 in this subnet but it is simultaneously connected to the DexterWide hotspot to ensure internet access. The RPI runs a DHCP server in the 192.168.10.0 subnet. When connecting a PC to the Dlink switch with an ethernet cable, it will automatically

get an address in this subnet starting from address 192.168.10.50. There is a spare USB WiFi dongle on the table to simultaneously connect to the DexterWide hotspot in order to ensure internet connectivity.

- Launch the RPIt setup script on the dextair RPI (192.168.10.20).
- In the “demo” directory, open the Vicon demo.
- Start the demo. The plots should be updated accordingly to the motion of the target.

NOTES

1. The Dell Inspiron has a license USB dongle connected at the back. This dongle must be connected when launching Vicon tracker.

2. Messages of the VRPN tracker may be monitored on the RPI by typing “screen -r VRPN” in the Linux terminal.
3. When you are done with your experiments, please turn off the POE switch using the multi-outlets switch: