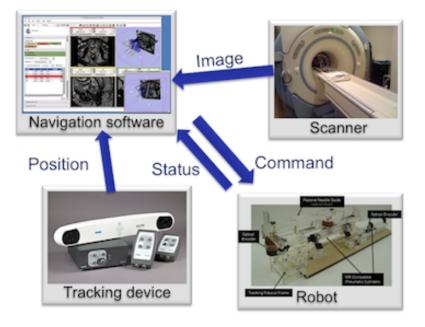


Slicer4 Training Compendium

### Connecting IGT Device with OpenIGTLink



Junichi Tokuda, PhD

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### Material

This course requires the following installation:

• 3DSlicer version 4.1 Software (Slicer 4.1.0 r19886), which can be installed from:

http://download.slicer.org/

• Tracker Simulator:

http://wiki.slicer.org/slicerWiki/index.php/Modules:OpenIGTLinkIF-3.6-Simulators

#### Disclaimer

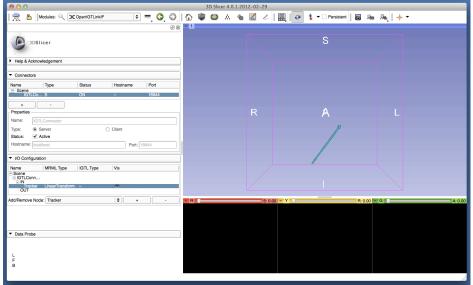
It is the responsibility of the user of 3DSlicer to comply with both the terms of the license and with the applicable laws, regulations and rules.

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# Learning objective

Following this tutorial, you'll be able to import tracking data from external devices (e.g. tracking system) through the network.



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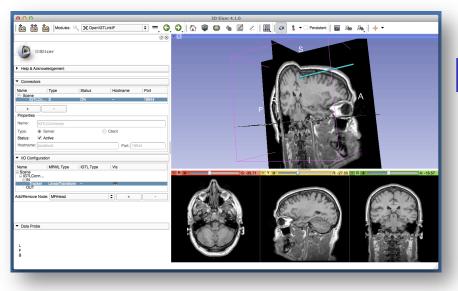
### Overview

- Configuring OpenIGTLink IF module
- Setting up Test Server
- Visualizing Tracking Data

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### Part 1: Configuring OpenIGTLinkIF module

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# Slicer3 GUI

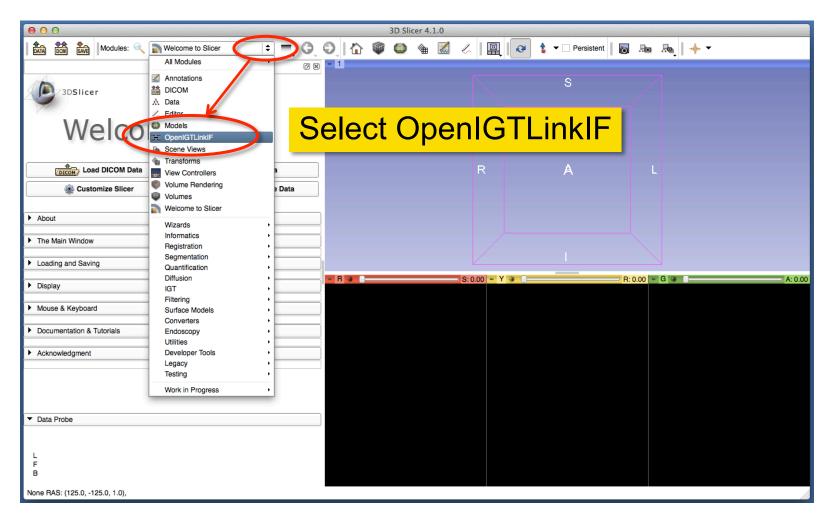
The Graphical User 000 • = G ATA CALL Modules: Kerne to Slicer Interface (GUI) of 3DSlicer Slicer3 integrates five Welcome components: **3DViewer** DATA Load Data Load DICOM Data Customize Slicer Ownload Sample Data •the Menu Toolbar Module GUI Panel Loading and Saving the Module GUI Panel Display Mouse & Keyhoard Documentation & Tutorials •the 3D Viewer Acknowledgment Slice Viewer •the Slice Viewer Slice and 3D View the Slice and 3D View Controller None RAS: (125.0, -125.0, Controller

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# Starting OpenIGTLinkIF



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# **Adding Connector**

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	"Connect IF modul

To connect 3D Slicer to external device/software using OpenIGTLink IF, a "connector" has to be created for each connection.

Connectors can be configured in "Connectors" Tab in OpenIGTLink IF module.

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### **Adding Connector**

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Add/Remove Node: Select a LinearTransform	Add/Remove Node: Select a LinearTransform + -

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# **Changing Connector Name**

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You may change the name of the connector by type in a new name and hit Return key.

This is an optional step. It is a good idea to name connectors, especially if you have multiple connections.

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## Setting Connector Type

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Add/Remove Node: Select a LinearTransform + -		Add/Remove Node: Select a LinearTransform

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-0.452844, 0.142857, -0.88007, 40.6838 -0.464957, -0.88007, 0.096389, 29.066 0, 0, 0, 1
^C
artemis:bin junichi\$ ./TrackerServer 18944 10
-1, 0, 0, 50 0, 0.142857, 0.989743, 0
0, 0.989743, -0.142857, 50
0, 0, 0, 1
-0.98861, -0.0988095, 0.113525, 49.0033
0.0988095, 0.142857, 0.984799, 9.93347
-0.113525, 0.984799, -0.131467, 49.0033
0, 0, 0, 1
-0.954892, -0.196632, 0.222525, 46.0531
0.196632, 0.142857, 0.970014, 19.4709
-0.222525, 0.970014, -0.0977491, 46.0531
0, 0, 0, 1

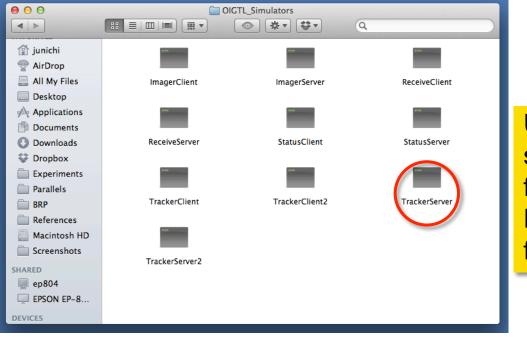
### Part 2: Setting up TrackerServer

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### **Extract Server Program**



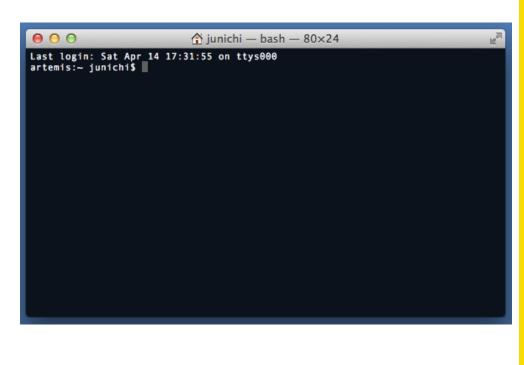
Uncompress the archived simulator files downloaded from the simulator page. Find TrackerServer binary file.

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# **Open Terminal**



#### Open a terminal window.

Windows: Open the start menu, type "cmd" in the search box area and then press Enter key.

Mac: Open "Utilities" in "Application" folder and double-click the "Terminal.app" icon.

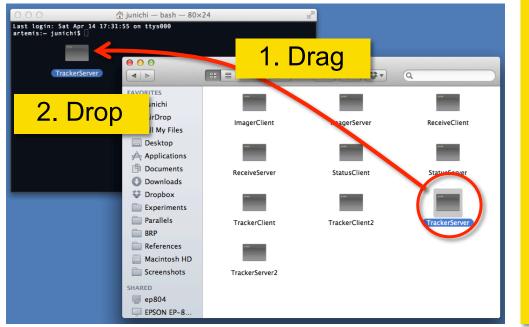
Linux: Open terminal window.

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# Start TrackerServer (1)



Windows/Mac: Drag "TrackerServer" icon from Explorer (Win) or Finder (Mac) and drop into the command window.

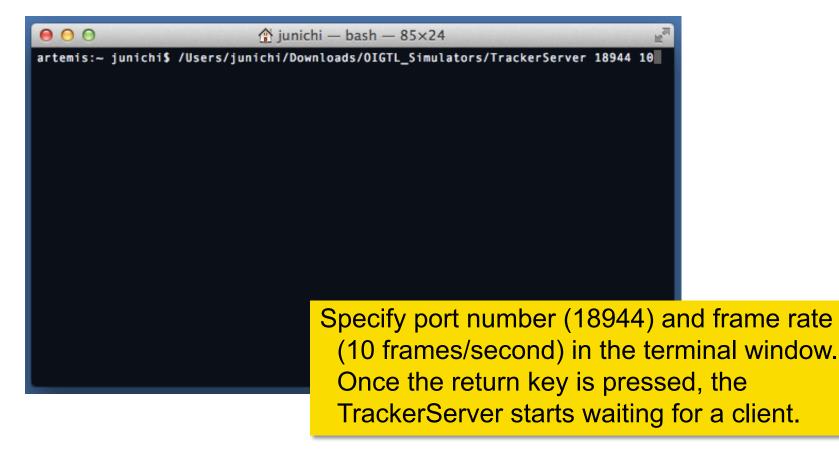
Linux: Type the path to the binary file of "TrackerServer".

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# Start TrackerServer (2)



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### **Connect to Test Server**

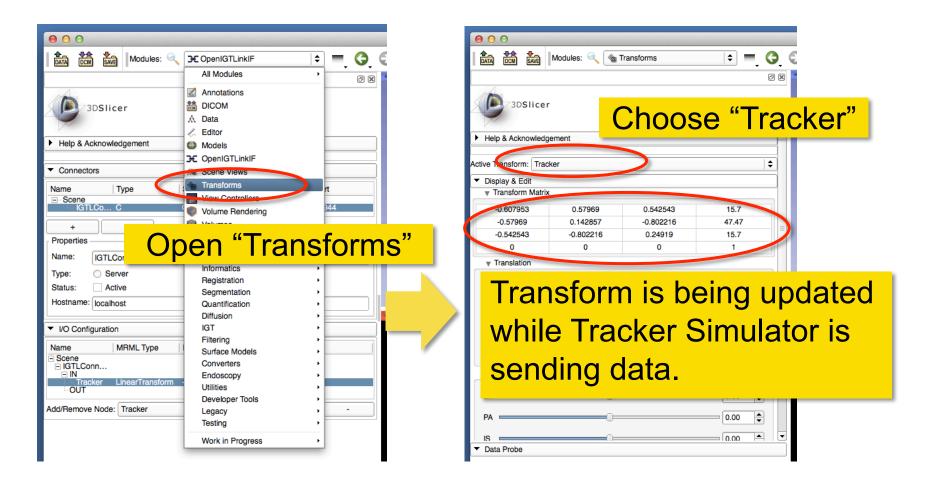
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Ø X	
Belp & Acknowledgement	☆ junichi — bash — 85×24     ☆ junichi / Users/junichi/Downloads/OIGTL_Simulators/TrackerServer 18944 10     -1, 0, 0, 50     0, 0.142857, 0.989743, 0     0, 0.989743, -0.142857, 50     0, 0, 0, 0, 1
Connectors     2. Status becomes "ON"     Connectors     Connectors	
Name Type Status Hostname Port	-0.530001, -0.5500035, 0.113325, 45:0035 0.0988095, 0.142857, 0.984799, -0.3347 -0.113525, 0.984799, -0.131467, 49:0033
GTLCo C ON localhost 18944	0. 0, 0, 1
Name: IGTL Connector	0, 0, 0, 1
Name: IGTLConnector Type: O Server @ Client	-0.900192, -0.292489, 0.322653, 41.2668 0.292489, 0.142857, 0.945538, 28.2321
Status: 🗸 Active	-0.322653, 0.945538, -0.043049, 41.2668 0, 0, 0, 1
Hostname: Iocanost Port: 18944	3. Simulator starts printing
<sup>▼ VO Co</sup> Name Scene 1. Click "Active" to connect	random transform matrix
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Add/Remove Node: Tracker + -	
	window.

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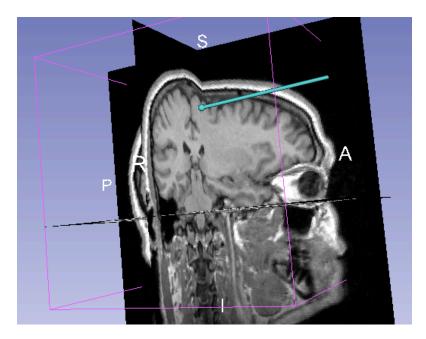
### **Checking Transform**



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### Part 3: Visualizing Tracking Data

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### Loading Sample MRI Data

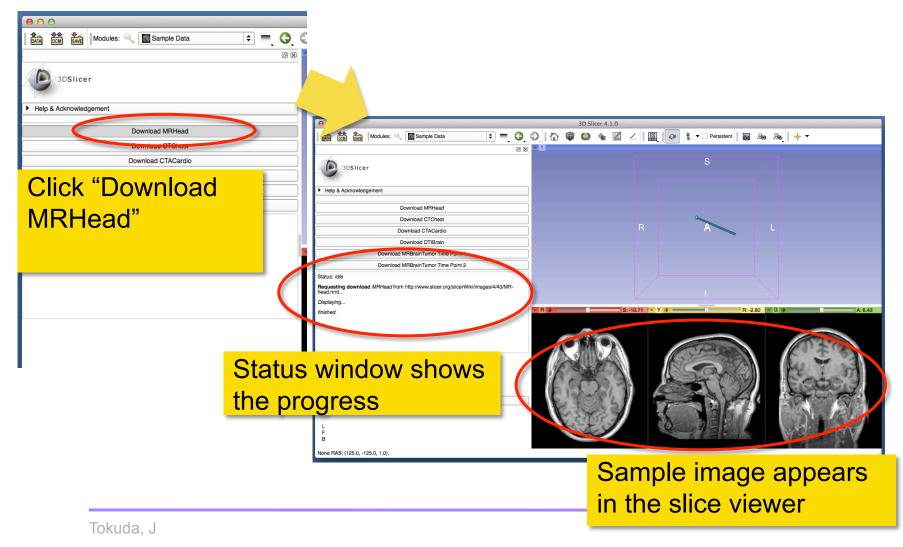
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# Loading Sample MRI Data



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### **Choosing Locator Source**

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Hostname: localhost Port: 18944
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### **Enable Locator**

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	Status: 🗹 Active
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Add/Remove Node: Tracker + -	Add/Remove Node: Tracker + -

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## **Visualizing Locator**

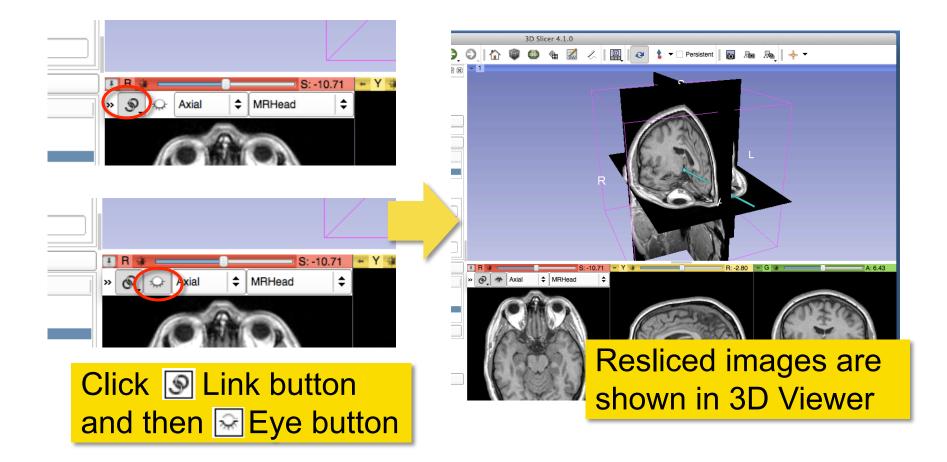
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### **Showing Resliced Images**



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• 3D Slicer OpenIGTLinkIF Documentation Page

http://www.slicer.org/slicerWiki/index.php/ Modules:OpenIGTLinkIF-Documentation-4.1

• OpenIGTLink Protocol Web Page:

http://www.na-mic.org/Wiki/index.php/OpenIGTLink

• Paper

Tokuda J., *et al.* OpenIGTLink: an open network protocol for image-guided therapy environment. Int J Med Robot. 2009 Dec;5(4):423-34. PMID: 19621334. PMCID: PMC2811069.

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