

Digitizing Pointer Configuration

Defining the digitalizing pointer so the TIP of the pointer can be computed.



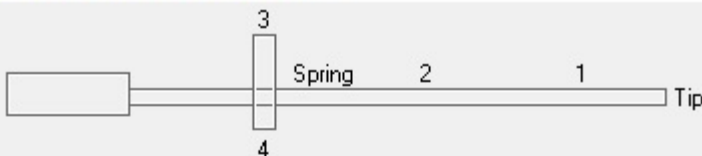
There are two general types of pointers.

- Spring loaded - allows Visual3D to recognize when the tip location should be assigned to a landmark; e.g. when the spring is compressed.
- Static - The user must select a button to notify Visual3D to assign the tip location to a landmark.

In both cases, the pointer can be tracked with any number of markers, not just those used to define the location of the landmark.

Configuration Dialog

Digitizing Pointer Configuration



Define Pointer Tip

The tip of the wand is defined using two markers on the wand and an offset from one of the markers.

Typically, the two markers along the long axis of the pointer are used.

Marker 1: P.DIST

Marker 2: P.PROX

☐ Use 3rd marker (When the tip is not aligned with the long axis)

Offset from marker 1 to the pointer tip (e.g. [0, 0, -0.127])

X 0 Y 0 Z -0.127

Optional offset (creates an axis landmark for each digitized point)

X2 Y2 Z2

Pointer Trigger Markers for Detecting Spring Compression

☒ Check this box if the pointer has a spring compression mechanism

Trigger Marker 1 (e.g. Marker 1 or 2 for wand pictured above):

P.DIST ▼

Trigger Marker 2 (e.g. Marker 3 or 4 for wand pictured above)

P.PROX

Tracking Markers

Only use for wands where all markers are static, and tip is not aligned with the long axis of the wand.

CAL	P.DIST	RSK2	RTH3
ICAL	P.PROX	RSK3	RTH4
LCAL	RPV1	RSK4	
LPV1	RPV2	RTH1	
LPV2	RSK1	RTH2	

◀ ▶

Load from config file

Save to config file

OK

Pointer Dimensions

There is a set screw on the marker closest to the tip, which means that the location of the marker is variable.

In addition, there are two different tips on the marker; the bigger tip can be pulled off to reveal the smaller tip.

Because of this variability it is important that each lab measure the distance from the center of the marker to the tip.

This means that the value for the z-offset in the figure above should be set uniquely for each laboratory.

The travel of the marker doesn't matter too much, but Visual3D assumes the pointer is extended during the static trial because this is the start position for estimating the travel.

Custom Pointer Configurations

The Visual3D Digitizing Pointer module can be configured for any custom digitizing pointer that uses motion capture markers to locate the pointer in a 3D volume.

Pointers equipped with a “trigger mechanism” can trigger an event that will help Visual3d identify frames of interest automatically. For example, The Davis Pointer has a spring in the housing that can be compressed with the tip located at the anatomical landmark of interest. Compressing the spring causes the motion capture markers to move closer together. Visual3D can identify events associated with the spring compression, and thus can determine the anatomical landmarks automatically.

Other pointers, such as those that are used commonly with Northern Digital cameras require a separate external trigger, or the user must identify the events manually, which actually isn't a terrible burden because it is necessary to verify the events even when the process is automatic. Verification is required because the user may change their mind and choose to digitize the same landmark twice (e.g. because the tip slipped on the first attempt). The result is that this erroneous event must be deleted.

Model Template

The Model Template contains the configuration of the digitizing pointer and the definition of the digitizing landmarks. In most cases the user simply needs to open the model template to load the pointer and landmark definitions.

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