NIRSite

Getting Started Guide

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Overview

About NIRSite 3
Let's get started 4
The NIRSite interface 5
NIRSite controls 7
Creating a montage 8
Saving montages 9

About NIRSite

NIRSite is a visual tool that makes creation of complicated montages a simple procedure. It provides a user-friendly way of specifying the arrangement of NIRS sources and detectors on the widely-used ICBM-152 head model. The created montages can be saved, and subsequently imported into NIRStar for data acquisition or nirsLAB for analysis.

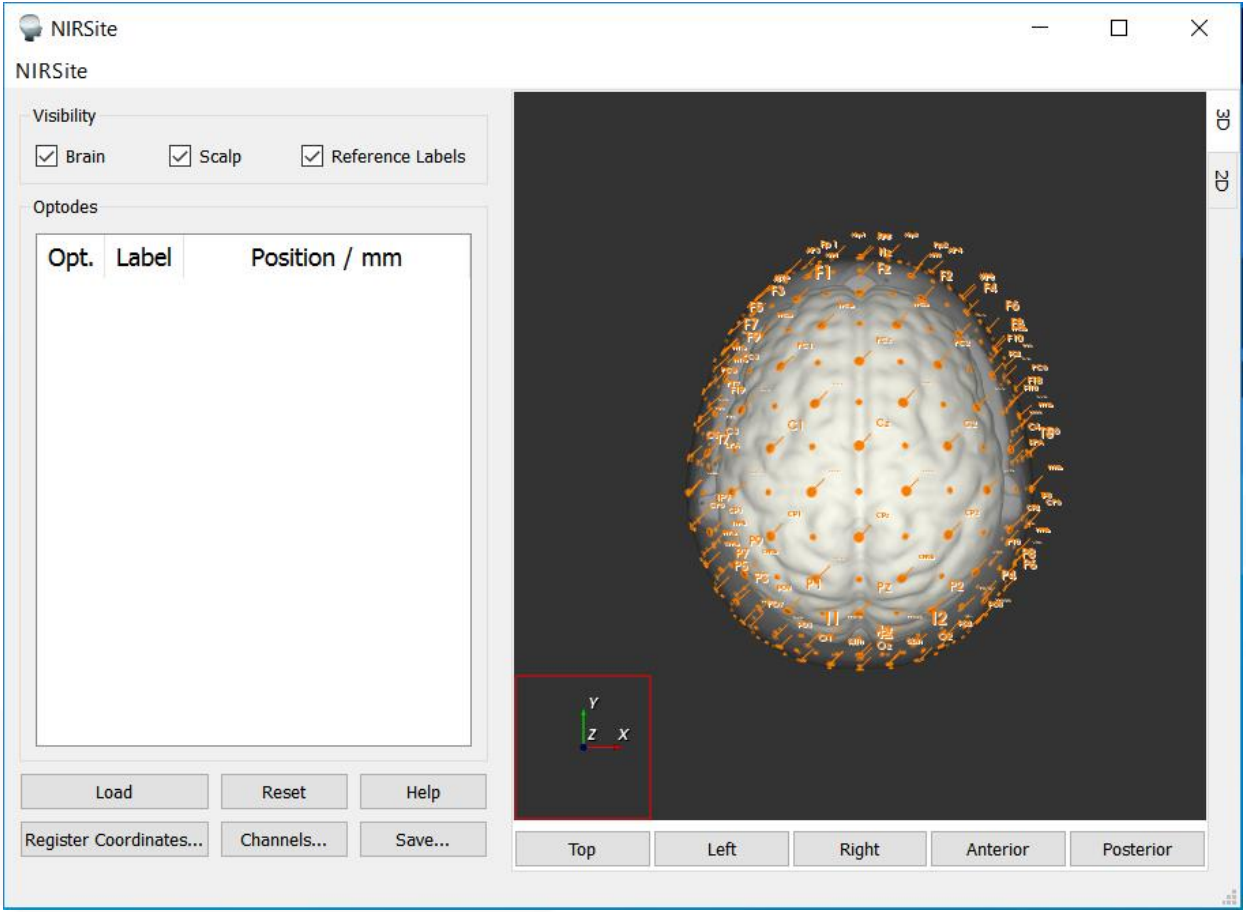
The user interface of NIRSite comprises an interactive 3D rendering of the scalp and brain surfaces, and allows for easy optode placement and location. Three different types are distinguished: “Source”, “Detector” and “Other” (e.g. EEG electrodes). NIRSite allows the user to position optodes manually, or register positions that have been recorded with a digitization device.

Let's get started

1. If your laptop, PC or tablet has already been configured by NIRx, simply launch the NIRSite application, by clicking the NIRSite application icon. When using NIRSite, it is not necessary to connect your NIRSport or NIRScout system to your laptop, PC or tablet.
2. If you want to install the NIRSite software on another system, please download the latest version from the NIRx Help Center at http://nirx.net/nirx-help-center. Follow the installation instructions throughout the process. Only reboot your system at the end of the installation. NIRSite runs on Windows XP, 7, 8 and 10. For a detailed list of system requirements, please consult the NIRSite User Manual. The installation process may require you to reboot the machine. If so, you will be prompted at the end of the installation.
3. It is not necessary to specify hardware or configure NIRSite in anyway. You may immediately begin using the software.

The NIRSite interface

- The NIRSite interface consists of two panels. On the right, a 3D visualization of the head model and the current montage is shown. Alternatively, by clicking on the tabs located on the right side of this window, it is possible to switch to a 2D view. **The 2D view is not interactive and solely provides a visual representation of the montage.**
- The buttons below the 3D visualization allow to quickly navigate to a specific view (e.g. “Anterior”).
- On the left, panel controls, several buttons and a table with details of the current montage are located. In the “NIRSite” menu located in the upper left corner, the user may (de)select the “Simplfied GUI” option. When this option is enabled, additional controls are hidden.
- In the visibility section of the left panel, three checkboxes can be (un)checked in order to specify which elements of the 3D scene should be rendered (i.e. the brain surface, the scalp surface and EEG landmark text labels).
- The optode table lists the optodes in the current montage, and specifies their name (under “Opt.”), label and position.
- The buttons below the optode table allow to Load montages that were previously created in NIRSite, Reset the current montage back to default, get Help on how to use NIRSite, Register Coordinates from an alternative source (e.g. digitized coordinates), view distances of the Channels, and Save the current montage. More information on these specific functions can be found in the *NIRSite User Manual*.


NIRSite
NIRSite
Visibility
Brain
Scalp
Reference Labels
Optodes
Opt.
Label
Position / mm
Load
Reset
Help
Register Coordinates...
Channels...
Save...
3D
2D
Y
Z
X
Top
Left
Right
Anterior
Posterior

NIRSite controls

The NIRSite controls are easy and intuitive, and can be separated in View-changing controls and Montage-changing controls. All these controls apply to the right panel (3D visualization). **These controls do not apply to the 2D visualization, which only provides a visual representation of the montage (not editable)**.

View-changing controls

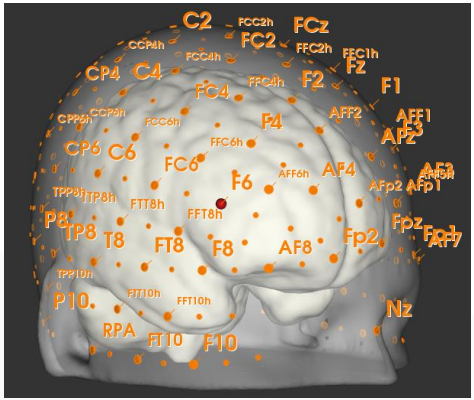
- Left-click + mouse movement: *free rotation*
- Ctrl + Left-click + mouse movement: *rotation around single axis*
- Right-click + mouse movement: *panning*
- Mouse wheel: *zoom in and out*

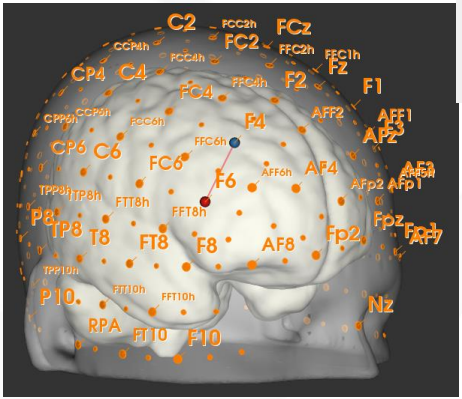
Montage-changing controls

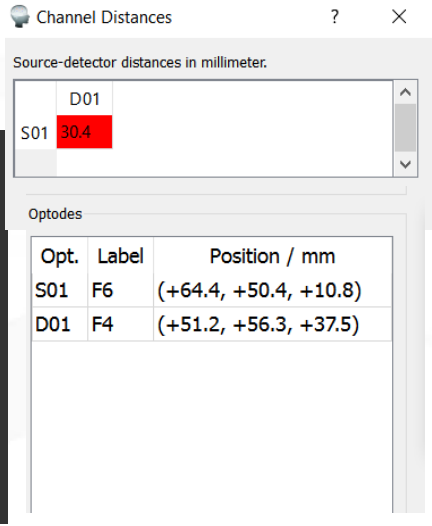
- Shift + Left Click anywhere on the scalp: *create source optode*
- Shift + Left Click on an EEG landmark: *create source optode at this EEG landmark*
- Shift + Left Click on an existing optode: *change type of the optode (i.e. 'source', 'detector', 'other')*
- Shift + Right Click on an existing optode: *remove the optode*

Creating a montage

1. First, Shift + Left Click on a location on the head. This will create a Source optode. In the example, EEG position F6 is clicked (left picture). If an EEG position is set as target, the corresponding label will be displayed in the list.
2. Second, Shift + Left Click twice on another location on the head. In the example, the EEG position F4 is clicked. This will create a Detector optode. Automatically, NIRSite will create a channel if the distance between the source and the detector is below the threshold distance.
3. Repeat these steps to create a complete montage. Optode positions are automatically displayed in the optode table, channel information can be viewed by clicking on the “Channels” button.

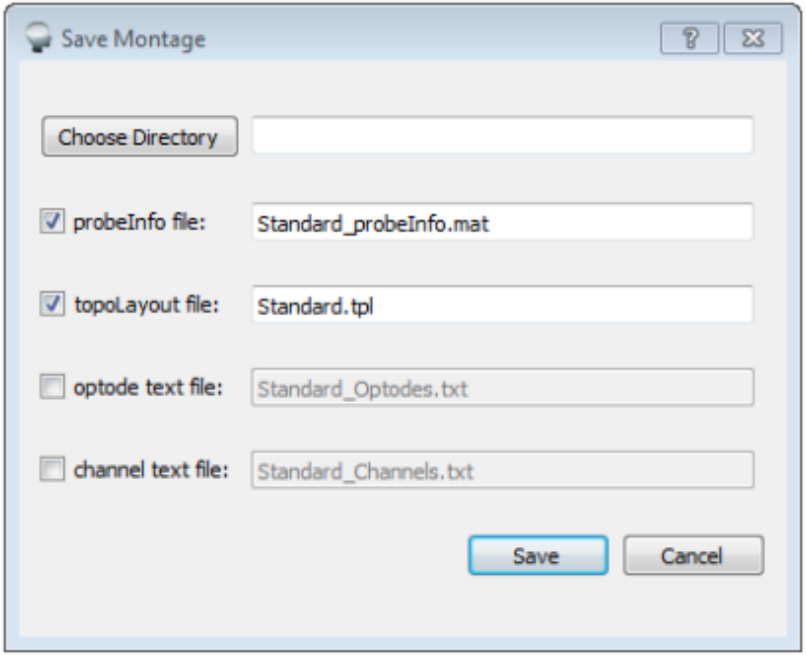






Saving montages

1. If your montage is ready, you may save it by clicking the “Save” button located at the bottom right of the left panel. This will open the “Save Montage” dialog window.
2. By clicking on the “Choose Directory” button, you can specify the output directory where the montage files will be saved.
3. NIRSite can save the current montage in three different files: probeInfo files (for nirsLAB analysis), topoLayout files (for data acquisition with NIRStar), or in plain text files (optode or channel coordinates). By selecting the corresponding checkboxes (and changing the output file names in the text boxes next to the checkboxes).



4. Finally, click the “Save” button to write the montage into the specified files.

NIRX is a world-leader in providing integrated solutions for fNIRS neuro-imaging. In 1988 we introduced the concept of tomographic imaging (i.e., multi-distance measurements) in dense scatted media base on diffusely scattered light. This approach has since been widely adapted and has served to launch the modern day field of fNIRS tomography.

Through our offices in Berlin, Los Angeles, New York and São Paolo, our engineers and grant-funded investigators are providing a growing number of research teams world-wide with comprehensive technology solutions for the most demanding investigative applications.

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