

Product Developments

Looking back at BrainVision Analyzer and RecView in 2009

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Following the release of Analyzer 2 in the Summer of 2008, BrainVision RecView was also updated in April 2009 to meet the demands of modern software technology. This article will briefly summarize the improvements to these two products that have been released during the course of this year or that have already been developed and are due for release soon.



We shall first take a look at Analyzer 2. Version 2.0 incorporated many new features, and following the main release, it was first necessary to correct some bugs which had not shown up during intensive beta testing. This resulted in the updated Version 2.0.1 in Spring 2009. But even this update was far more than merely a service pack of the kind we are familiar with for Windows. Analyzer 2.0.1 also incorporated a number of additional features.

To start with, the ICA Inverse module provides a powerful tool for manipulating data calculated using ICA. After components have been analyzed using ICA, the interactive user interface of ICA Inverse allows users to try different combinations of back-transformation of the ICA into the EEG. Artifact correction and the extraction of relevant components for source localization are just two of the potential applications.

The export and import of markers has also been improved, replacing the familiar solution from Analyzer 1. Markers can now also be exported in XML format, a data format that has become very popular over the past decade and which is supported by many third party products. This format also makes it very easy to extract the user properties of markers. The marker import function is also able to read these files to merge markers in new nodes. However, this module also incorporates a new feature that makes it possible to import data from other history nodes. Why is this useful? Imagine a situation where you have implemented some filters in the frequency domain and transform the data back to the time domain using the FFT Inverse function of Analyzer 2. In this event, all your time domain markers would have been lost because they made no sense in the frequency domain. The node feature of the marker import function allows you to capture the markers from the parent node before you perform the FFT.

But new features were not the only changes in Analyzer 2.0.1. One future trend in computer technology will be the increasing number of processor cores incorporated in a single PC. In Analyzer 2.0.1 we introduced the kernel functionality that makes it possible to exploit such multikernel architectures to improve the performance of our transforms. The filters module will be redesigned and released as the first example of this group.

For BrainVision RecView 1.3, we moved over to the new version of the Microsoft .NET Framework, Version 3.5. This means that anyone wanting to write their own filters for RecView is now able to use the Microsoft Visual Studio 2008 Express edition, which can be downloaded free of charge from Microsoft's website. Other improvements in RecView 1.3 included the new segmentation and averaging features which open up new possibilities for online data evaluation, especially in combination with online MR artifact correction. The FFT was improved to allow it to also work with segments and overlapping ranges. This is of interest if you are using RecView for biofeedback applications.

A new online LORETA module makes it possible to apply biofeedback modules not only to channels or combinations of channels but also to the activity of defined regions in the brain. The virtual channels produced by this module can be used in the same way as the channels from acquisition.

Many customers have also asked us to provide a special function, namely promotion of triggers on the parallel port depending on particular events extracted from the EEG. We will meet this demand by releasing a set of trigger modules, for instance a level trigger and a band power trigger and even an SDK for developing trigger applications not covered by the general-purpose functionality.

Another interesting module for RecView is currently in beta testing and is due for release soon. The bridge tool will detect gel bridges during acquisition using a combination of correlation methods. This will provide new options for controlling and correcting the validity of the data during recording.

So we see that a large number of improvements have already been released for these two products and work is in hand on further enhancements. And we have not even mentioned all the components that have been developed for research and for using BCI with our equipment and software. These aspects are covered by another article in this issue. ●