

DWT_Plugin



Release 2.1 - Single user only !

Please send us suggestions or bug reports !!

Created Jul 2001 by Didier Cugy Last edit : 25 Feb 2007

Updates and more information on : <<http://www.septmr.com>>

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DWT_Plugin Applies to RealBasic 5 or more recent running on Mac PPC, Mac OSX and Win platforms

DWT_Plugin allow calculation of DWT (Discrete Wavelet Transform) and inverse Wavelet transform.

DWT_Plugin allow calculation of double samples

DWT_Plugin Property :

Name	type	Description
RegistrationCode	string	
SampleFreq	double	Sampling Frequency
RawDataSize	integer	the Size in samples of the RawData
SampleSize	integer	not used
Level	integer	Niveaux d'échelle
Span	integer	Taille du bloc alloue
Fmin	Double (Read Only)	Fmin de filtrage
Fmax	Double (Read Only)	Fmax de filtrage
Wavelet	integer	Fonction d'ondelette
DWMax	integer	Fonction max
Storage	REalObject	RBObj storage for callback

DWT_Plugin Method :

Name	Parameters Description	Description
EnableEvent	Value as boolean	Enable or disable WTEvent
WT		Wavelet Transform Calculation
IWT		input : RawData array
RawData	index as integer	Get or Set the RawData with the size defined by the SampleSize property
LP	LowLevel as integer	LowPass filter
HP	HighLevel as integer	HighPass filter
BP	LowLevel as integer, HighLevel as integer	BandPass filter
NP	LowLevel as integer, HighLevel as integer	Notch filter

Sample :

```
dim myWT as DWTCClass
```

```
dim i as integer
```

```
myWT.RawDataSize = 100 // 100 samples
```

```
// Now build a test sample
```

```
for i = 0 to myWT.DataSize - 1
```

```
    myWT.RawData(i) = 128*(sin(i*6.28/myWT.RawDataSize))
```

```
next
```

```
// Calculation of the WT
```

```
myWT.WT()
```

```
// Get result :
```

```
for i=0 to myWT.DataSize - 1
```

```
    xxx = myWT.RawData(i)
```

```
next
```

```
MsgBox "The plugin seems to be working fine."
```

Wavelet

This plugin perform Wavelet Based calculation based on a data set (RawData). This program use orthogonal Wavelet analysis based on Daubechies' derived coefficients.

Orthogonal Wavelet Transform decomposes a data set onto an orthogonal basis set. This orthogonal basis set consist of a fundamental wavelet which is translated by steps of 2 and scaled by a factor of 2. A single coefficient is calculated as the inner product of a wavelet vector with a data vector.

A series of coefficients are generated by applying the inner product $N/2$ times (N is the Number of points within the data set) shifting the wavelet vector by 2 position each time.

The original data set will be decomposed in two series of values half as long the original data set. After calculation the data set (RawData) contain these two series of values. The first half (of RawData) corresponds to the coefficient generated from the inner product with the scale function. The second half corresponds to the coefficient generated from the inner product with the wavelet function. This transform will be called a first level transform and it only applies the wavelet function at the smallest scale.

If the analysis is done along with an analysis using the function expanded by a factor of two, the results will be called a second level transform. From multiresolution analysis, the transform using a wavelet expanded by a factor of 2 is the same as applying the original wavelet transform to the coefficient generated from the inner product with the scale function. The following diagram illustrates the notation and the relationship of levels of the analysis of the transformed data.

original	01	02	03	04	05	06	07	08
level 1	IS1	IS2	IS3	IS4	IW1	IW2	IW3	IW4
level 2	ISS1	ISS2	ISW1	ISW2	IW1	IW2	IW3	IW4
level 2	ISSS1	ISSW1	ISW1	ISW2	IW1	IW2	IW3	IW4

IS - inner product with the scale function

IW - inner product with the wavelet function

Reference :

Daubechies, I., 1988: Commun. Pure and Appl. Math., vol. 41, pp 909-996. Mallat, S.G., 1989 : IEEE Trans. on Pattern Analysis and Machine Intelligence, vol. 11, pp.674-693. Numerical Recipes in C: the Art of scientific computing (ISBN 0-521-43108-5) 1988-1992 Cambridge University Press

History

25 Feb 2007 : 2.1

Compiled as Universal Binary

07 Jan 2006 : 2.0

official release with new documentation and example

23 Jul 2001 : 1.0a2

update documentation

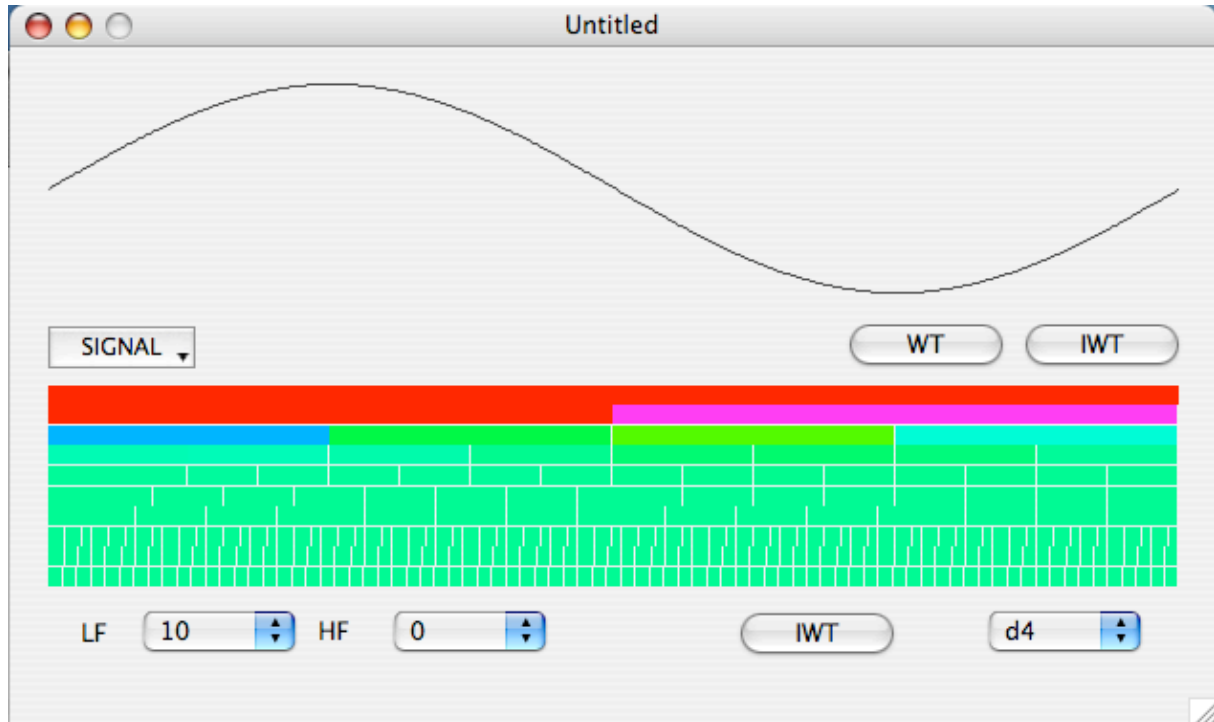
22 Jul 2001 : 1.0a1

First pre-release

WT2005.rbp



TestWT is a test application for WT_plugin. TestWT source is free.



Test WT main window is segmented into two parts :

- the data part
- the scalogram part

theSignal button allow to fill the data part with different kind of signal as sin curve or EKG curve.

WT and IWT buttons do Direct Wavelet transform and inverse wavelet transform.

The scalogram is updated if you press WT button as if you select a new curve.

The scalogram part is associated with three popup menus and a button :

The two left popups (LF and HF) allow filtering by setting to 0 the different smooth or detail part of the scalogram. Higher values define low frequency. Lower value, high frequency. The high frequency are at the bottom of the scalogram, lower frequency at the top.

The right popup menu select the wavelet function from daubechies 2 to daubechies 20.

The IWT button allow inverse transformation of the scalogram datas.

How to setup Registration Code in your App ?

WT_Plugin is now a shareware and it is necessary to register to avoid periodically drawing of the Please Register Alert !



Setup Registration Code in your App is very easy.

First please to our Web Site (<http://www.septmr.com>)
Press purchase button below FWT_PLUGIN.



Purchase is done from PayPal.

After checking your payment PayPal will send you an e-mail with the registration code like the following.

Dear customer,

Thank you for purchasing SEPTMR software.

To activate the Registered mode, open the "About ..." window under the Apple menu or the Windows menu and in the field labeled "Activation Key" enter MDBwMqY7Nu-356876964. Please enter the MDBwMqY7Nu-356876964 as shown, because the fields are case sensitive and you will not be able to use the program if they are not entered exactly as shown here. Also, this is your private SECRETE code, so do not give it out to others.

If you have any questions about SEPTMR software please contact support@septmr.com

the Activation code is **MDBwMqY7Nu-356876964** in our case.
to register in your code simply do something like.

```
----  
my_method_to_do_something(param as void) as void  
dim myDWT as DWTClass
```

```
myDWT = new DWTClass  
myDWT.RegistrationCode = "MDBwMqY7Nu-356876964"
```

```
-----
```

then the drawing of the PleaseRegister Window will be disabled.

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