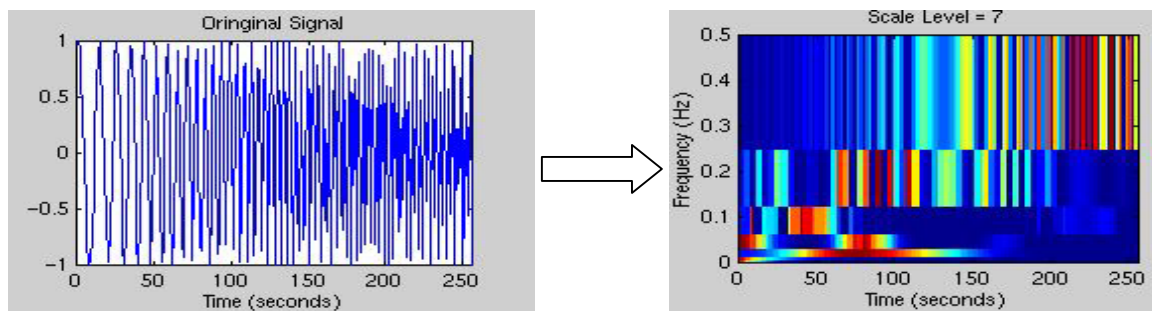


Title: Discrete Wavelet Transform (DWT)

The need for a combined time-frequency representation stemmed from the inadequacy of either time domain or frequency domain analysis to fully describe the nature of non-stationary signals. A time-frequency distribution of a signal provides information about how the spectral content of the signal evolves with time, thus providing an ideal tool to dissect, analyse and interpret non-stationary signals. This is performed by mapping a one dimensional signal in the time domain, into a two dimensional time-frequency representation of the signal.



Your task is to develop a C-program with VB GUI that enables the user to perform a Discrete Wavelet Transform (DWT) of discretely sampled data, which are provided as ASCII files or as output of MultiChannelScope (MCS) [1,2]. Existing algorithms can be utilized [3]. Both time signal and transformed data shall be illustrated and data analysis and printout should be enabled. Your program should be developed in consideration of the necessities of the intended advancement of the existing MCS software.

- [1] C.Schermaier and B.Vonier, *MultiChannelScope LIGHT*, Specification and Manual, FH Joanneum (2002)
- [2] E.Bratschitsch, Th.Lechner, A.Casey und G.Bischof, *Oszilloskop-Analysesoftware*, Elektronik **18** (2002)
- [3] F.Schmalhofer, F.Wörgötter and A.Grüner, *Signal Analyzer 3D*, Specification and Manual, FH Joanneum (2003)

Participants

This project has to be worked out in partial fulfillment of the requirements of **Information Systems and Programming 3**, **Engineering Mathematics 3** and **General English 2**.

Number of participants: 3

Schedule

Kickoff meeting: 9/10/03 at 5.45 p.m., LR Ledwinka
SW+Report delivery: 19/1/04 until 12 p.m., secretariat of FZT/SFT
Presentation: 29/1/04, LR Ledwinka

Supervisors

FH-Prof. Dr. Günter Bischof
FH-Prof. DI Emilia Bratschitsch
FH-Prof. Annette Casey, MA
Christian Steiner (FZT01)

guenter.bischof@fh-joanneum.at
emilia.bratschitsch@fh-joanneum.at
annette.casey@fh-joanneum.at
christian.Steiner@fh-joanneum.at

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