**IEEE KITCHENER-WATERLOO**

## CAS-Chapter/SP&NN-Chapter Presentation

# Bob Dony

PhD, PEng, Assist. Professor
School of Engineering  University of Guelph

# "Neuroprocessing:  Applications in Image Compression and Audio Processing"

## Abstract:

Neural models of signal and image processing are known to have advantages over traditional methods due to their ability to learn from data and their nonlinear processing elements.  This talk will cover applications in both image compression and audio processing.  Two approaches to image compression are explored.  A neuro-fractal method that uses neural network architectures to enhance multidimensional IFS fractal coding will be presented.  Multilayer perceptrons are used as nonlinear analysis and synthesis filters in a multiresolution filter bank decomposition.  For audio processing, a two-stage neural architecture is used to effect an adaptive gain controller for noise reduction in hearing aids.  Finally, some recent results using matching pursuit in blind source separation for noise reduction will also be presented.

## Biography:

Receive BASc and MASc in Systems Design Engineering, University of Waterloo in 1986 and 1988 respectively.  From 1988-1991, worked at Imaging Research, St Catharines, ON.  In 1991 left to pursue a PhD Electrical and Computer Engineering, McMaster under the supervision of Simon Haykin, which he received in 1995.  From 1995-1997 held the position of Assistant Professor in Physics and Computing at Wilfrid Laurier University.  Since 1997 has been with the School of Engineering, University of Guelph, teaching in the Engineering Systems and Computing program (with some in the Biological Engineering program).  Spent past year as a Visiting Researcher in the Media Engineering group at the University of York, UK, working with John Robinson (formerly of Systems Design, UW).  Research interests include neural network and other intelligent processing models for image and signal processing.  Applications include biological-based data such as medical imaging and audio processing.

**DATE:**      **Wednesday August 4, 2004**

**TIME:**       10:30-12:00

**LOCATION:  DC 1304, University of Waterloo**

*All are Welcome*
*Refreshments will be served*

Invited by:
**Prof. Mohamed Kamal (Chair of Signal Processing(SP)/Neural Network chapter)**
**& Fayçal Saffih (Chair of Circuits and Systems (CAS))**
**Electrical & Computer Engineering Department**