



United States Patent [19]

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Nguyen et al.

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[54] **WAVELET-BASED HYBRID NEUROSYSTEM FOR CLASSIFYING A SIGNAL OR AN IMAGE REPRESENTED BY THE SIGNAL IN A DATA SYSTEM**

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[57] ABSTRACT

[21] Appl. No.: **08/802,573**

The present invention relates to a system and a method for signal classification. The system comprises a sensor array for receiving a series of input signals such as acoustic signals, pixel-based image signal (such as from infrared images detectors), light signals, temperature signals, etc., a wavelet transform module for transforming the input signals so that characteristics of the signals are represented in the form of wavelet transform coefficients and an array of hybrid neural networks for classifying the signals into multiple distinct categories and generating a classification output signal. The hybrid neural networks each comprise a location neural network for processing data embedded in the frequency versus time location segment of the output of the transform module, a magnitude neural network for processing magnitude information embedded in the magnitude segment of the output of the transform module, and a classification neural network for processing the outputs from the location and magnitude neural networks. A method for processing the signal using the system of the present invention is also described.

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[52] U.S. Cl. **706/26; 706/15; 706/20; 706/22**

[58] Field of Search **342/90; 375/367; 702/76; 395/24**

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9 Claims, 5 Drawing Sheets

