Guest editorial

Engineers are people who work hard so that the rest of us can be lazier. The challenge for today's engineers is to build intelligent systems. We want to have systems that do not require detailed programming but which can be trained or learn from experience, which can cope with uncertainty and can handle ambiguity in linguistic knowledge. We want them to optimize themselves inheriting good properties from the previous versions. And we want to use them everywhere, wherever human intelligence is expensive, scarce or non-existent.

This special issue contains selected papers presented at the International ICSC Symposium on Engineering of Intelligent Systems (EIS'98) held in La Laguna, Tenerife, Spain in February 1998. Out of the 205 papers selected for the symposium, 14 were shortlisted for this special issue based on the original referee reports and session chairs. After a strict review by a technical committee, only seven were finally accepted. The contributions in this special issue are revised versions of the papers presented at EIS'98, as per the suggestions of the technical committee. In the special issue, the focus is on real-world applications backed up by sound theory.

The first two papers are on analysis and recognition of time-series. The paper by P. Felix et al. entitled *Trend detection based on a fuzzy temporal profile model* uses fuzzy logic to define and detect the evolution of a signal in time.

Unsupervised neural method for temperature forecasting by J.M. Corchado and C. Fyfe proposes a new neural network method for time-series prediction and compares it with the ARIMA model.

In building a pattern classifier, the input typically has a very large number of dimensions, e.g. in visual recognition. For an automatic system to be feasible, one should preprocess the input to extract a small number of salient dimensions thereby ignoring what is irrelevant for classification. The paper, *Recognizing humans by gait via parametric canonical space* of P. S. Huang et al. discusses dimensionality reduction by projection to the eigenspace in the recognition of humans by gait patterns.

Learning from examples is an important topic in intelligent system design and the paper by J.M. Garrell i Guiu et al. entitled *Automatic diagnosis with genetic algorithms and case-based reasoning* compares two different approaches on the medical application of automatic diagnosis of mammary biopsy images.

Another application area of intelligent systems is in building intelligent person-machine interfaces where the most natural form is by speech. J. Muller and H. Stahl in their paper *Speech understanding and speech translation by maximum a-posteriori semantic decoding* describes a system for speech understanding and translation taking semantic information into account.

F. Gunes et al. in *Neural network modeling of active devices for use in MMIC design*, model a microwave small-signal transistor using a neural network. The actual element is a highly nonlinear model with a large set of parameters and complicated relationships between them. Thus a neural network provides a simple model by which the element is approximated.

A major area of application of intelligent systems is in control. *A robotic system based on neural network controllers* by L. Acosta et al. uses a mixture of neural networks to control a robot arm.

The selection of the papers to be included in this special issue is performed by a technical committee consisting of:

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