Preface

This is the last of the three special issues of the Journal containing papers presented at the Platinum Jubilee Conference on Systems and Signal Processing organised by the Department of Electrical Engineering, Indian Institute of Science in December 1986. The eight papers in this issue are in the areas of parallel processing, computer vision, communications and artificial intelligence.

There are three papers in the area of parallel processing. Shishpal Rawat *et al* present a design for fast pipelined arithmetic units in VLSI. The proposed constant time adders could be quite useful in a data flow type architecture. Panneerselvam's paper is on systolic architecture. He proposes a VLSI architecture for the computation of the maximum and the minimum distance between points for a given set of points. The array requires $(3N + D - 1)$ time units where N is the number of given points and D is the number of dimensions. Pranay Chaudhuri's work is on parallel algorithms. He presents synchronised parallel algorithms for finding the centres and medians of trees and graphs on shared memory–SIMD machines.

R. T. Frankot and Rama Chellappa's work in computer vision is concerned with the determination of shape from shading. They present an improvement over an existing algorithm. The new algorithm is less sensitive to modelling errors and incomplete boundary conditions and is more stable.

V. D. Mytri and A. P. Shivaprasad investigate the techniques used for digitizing speech. They present an analysis and study the performance of two coders under a number of constraints which can exist in real digital communication systems. R. D. Bansiya highlights the system design and implementation details of the microprocessor-based on-board telecommand system used by the Indian Space Research Organisation (ISRO) in its Stretched Rohini Satellite Series.

The last two papers are in the area of artificial intelligence. G. Biswas and T. S. Anand present the details of a general purpose expert system shell that incorporates mixed-initiative reasoning and the Dempster-Shafer scheme of evidence combination for inexact reasoning. D. Gervais *et al* present a very interesting application of AI. They propose the use of AI techniques for acupuncture treatment, review their use in medicine and also provide a comprehensive introduction to acupuncture treatment. The proposed expert system is written in Prolog and implemented on an IBM-PC.

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Guest Editors