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# PROCEEDINGS OF INTERNATIONAL CONFERENCE ON SIGNAL PROCESSING

Oct. 22 - 26, Beijing, China

Vol. I

Edited by Yuan Baozong

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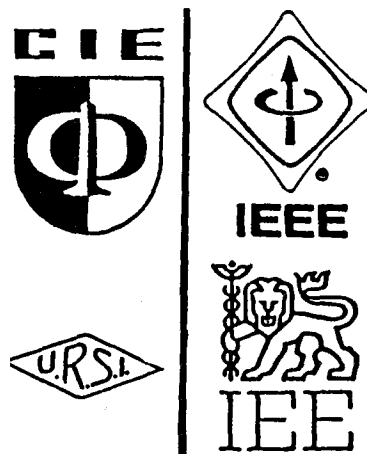
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Edited by Yuan Baozong

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## CHAIRMAN'S MESSAGE

On behalf of the Conference Committee, I welcome you to attend the 1990 International Conference on Signal Processing, the first ICSP held in China. The conference site is located in Xiang Shan (Fragrant Hill), a beautiful scenic spot in the western suburb of Beijing. I sincerely hope you will enjoy both the attractive scenery and the tranquil environment of the Fragrant Hill, and of course the principle event, the conference. The response to our Call for Paper has exceeded our expectation. In spite of our best effort to accommodate all papers, it has been necessary for us to turn down about one third of the submissions. To accommodate the large number of high quality papers, in addition to regular presentation sessions, we have organized a number of poster sessions. The papers were selected by our Technical Program Committee, it has worked very diligently to put together an outstanding technical program. In addition to our regular program, we have also organized a workshop and a technical tour. An industrial Exhibition will be held after the conference. I expect earnestly that the conference will be both a major academic event and as well a splendid meeting of international friendship.



Luo Peilin  
Conference Chairman



T.S. Huang



Ke Yuoan



Yuan Baozong

## ICSP'90 TECHNICAL PROGRAM COMMITTEE CHAIRMAN'S MESSAGE

It is a pleasure for me to welcome you all to the city of Beijing to attend the International Conference on Signal Processing, ICSP'90. I would like to extend my sincere thanks to all the participants who take special interest in contributing their own experiences on digital signal processing to this conference.

Digital Signal Processing is one of the leading technologies in modern information sciences. It explains why the response of the signal processing community to the call for papers of ICSP'90/Beijing was so overwhelming. We received altogether 514 submissions of abstracts from 24 nations, which is substantially more than that we expected. We are most grateful to all the contributors; without their interest and effort we would not have been able to achieve the high quality reflected in the Technical Program of Conference. Through the technical review procedure, taken by a review committee of 55 prominent experts, 40 of them are the members of the Technical Program Committee. We accepted 355 papers, 110 of which will be presented in poster sessions. Here I am deeply indebted to each member of the Technical Reviews Committee for finishing the fine job in the short duration of three days hardworking.

Within our conference, we have two sessions for the 1990 International Workshop on Spectral Techniques.

The papers are categorized into 12 areas: These areas are: Digital Signal Processing (DSP), Spectrum Estimation and Modeling, Speech Coding and Analysis, Speech Synthesis and Recognition, Multidimensional Signal Processing, VLSI for Signal Processing, Acoustic and Radar Signal Processing, Pattern Recognition, Adaptive Filters, Artificial Intelligence (including Neural Network Implementations) and Applications, Image Processing, Array Signal Processing. All papers to be represented at the conference have been included in the Proceedings of ICSP'90.

Finally, on the behalf of the Technical Program Committee I would like to express thanks to the Institute of Information Science, Northern Jiaotong University, who provided the computer support to catalogue and access all the abstract submissions. In particular we acknowledge the secretarial assistance of Mrs. Xiao Li and Tang Xiaofang, who processed the conference database and kept close contact with all contributors.

Best wishes to all attendees of ICSP'90, and hope you have a nice time in Beijing.

Yuan Baozong  
Technical Program Chairman



# ICSP'90 TECHNICAL PROGRAM SCHEDULE

		Poster 1 Poster 2						
		Hall 1	Hall 2	Hall 3	Hall 4	Hall 5	Hall 6	Hall 7
M O N D A Y	Morning	1.A1 Digital Signal Processing	2.B1 Spectrum Estimation & Modeling	3.C1 Speech Coding & Analysis	4.S1 Spectral Techniques	5.I1 Adaptive Filtering	6.Ap Ap01-10	7.Cp.Dp.Hp Cp01-03 Dp01-02 Hp01-03
	Afternoon 9:30 a.m.- 12:15 p.m. 1:45 p.m.- 5:00 p.m.	8.A2 Digital Signal Processing	9.F1 VLSI for Signal Processing	10.D1 Speech Synthesis & Recognition	11.S2 Spectral Techniques	12.K1 Image Processing	13.Ap Ap11-19	14.Kp Kp01-10
T U E S D A Y	Morning	15.A3 Digital Signal Processing	16.B2 Spectrum Estimation & Modeling	17.C2 Speech Coding & Analysis	18.H1 Pattern Recognition	19.I2 Adaptive Filtering	20.Bp Bp01-11	21.Kp Kp11-21
	Afternoon 8:30 a.m.- 12:00 a.m. 1:30 p.m.- 5:00 p.m.	22.E1 Multidi- mensional Signal Processing	23.G1 Acoustic & Radar Signal Processing	24.D2 Speech Synthesis & Recognition	25.L1 Array Processing	26.K2 Image Processing	27.Bp.Sp Bp12-21 Sp01-02	28.Lp.Ep Lp01-07 Ep01-02
W E D N E S D A Y	Morning	29.A4 Digital Signal Processing	30.B3 Spectrum Estimation & Modeling	31.J1 Artificial Intelli- gence & Applications	32.K3 Image Processing	33.I3 Adaptive Filtering	34.Jp Jp01-10	35.Ip.Fp Ip01-06 Fp01-02
	Afternoon 8:30 a.m.- 12:00 a.m. 1:30 p.m.- 5:00 p.m.	36.SS1 Special Subject 1	37.C3 Speech Coding & Analysis	38.J2 Artificial Intelli- gence & Applications	39.L2 Array Processing	40.K4 Image Processing	41.Gp Gp01-07	42.SS2 Special Subject 2

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- A Digital Signal Processing
- B Spectrum Estimation and Modeling
- C Speech Coding and Analysis
- D Speech Synthesis and Recognition
- E Multidimensional Signal Processing
- F VLSI for Signal Processing
- G Acoustic and Radar Signal Processing
- H Pattern Recognition
- I Adaptive Filtering
- J Artificial Intelligence and Applications
- K Image Processing
- L Array Processing
- S Spectral Techniques

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