CONTENTS

Preface

Sponsoring institutions

2-D IMAGE PROCESSING

Model-based selective image enhancement by means of adaptive rank order filtering (Invited lecture)
   P. Zamperoni
   3

Radiometric reference segmentation in thermal images
   P. G. Bison, E. Grinzato, G. M. Cortelazzo and G. A. Mian
   18

A color image segmentation process suitable for real time implementation
   L. Borghesi and R. Toscano
   23

Experimenting with region and multiple source segmentation
   F. Burbello
   31

A method for representing and computing immediate texture discrimination in natural images
   E. Catanzariti, M. G. Di Cerbo and R. Menna
   36

A segmentation method using Voronoï diagrams in a split and merge environment
   J. M. Chassery and M. Melkemi
   44

Image analysis applied to arts paintings in a multisource environment
   J. M. Chassery, M. Melkemi, H. T. Hu, Y. Chryssoulakis and A. Alexopoulou
   49

A second-order differential operator for multispectral edge detection
   A. Cumani
   54

Comparison of morphological operators for grey tones images
   V. Di Gesù and M. Tripiciano
   59

Towards unsupervised texture segmentation using Gabor spectral decomposition
   J. M. H. du Buf
   65

A comparison of dictionary-based relaxation methods
   E. R. Hancock and J. Kittler
   73
An iterative multispectral image segmentation algorithm
   J. Kittler and B. H. Ang 78

Discrete approaches for digital images and patterns of transformations

Diagnostic analysis of degradation on ancient buildings using textures
   M. G. Mancini and A. Marcelli 94

Segmentation of texture regions using points of sharp intensity change
   A. Perry 99

Region detection in gray-level images
   P. Puliti, G. Tascini and P. Zingaretti 106

Threshold logic and mathematical morphology
   R. van den Boomgaard 111

How do variations in resolution influence on gray tone spatial
dependence matrix method's capability to classify stochastic textures?
   A. Visa 119

A knowledge based approach to image segmentation
   S. Vitulano, A. Grimaldi and X. L. Feng 124

IMAGE CODING AND REPRESENTATION

Connected component labeling for arbitrary binary image representations
   (Invited lecture)
   M. B. Dillencourt, H. Samet and M. Tamminen 131

Recent results in adaptive image coding
   G. Armano, D. D. Giusto and G. Vernazza 147

A dynamic combinatorial Hough transform
   D. Ben-Tzvi, V. F. Leavers and M. B. Sandler 152

An application of binary arithmetic code to colour images
   A. Bozzoli, M. Dell’ Erba and G. Tadini 160

Some guidelines for the use and manipulation of colors
   in visual communication
   A. Della Ventura and R. Schettini 165

A useful image representation
   S. Di Zenzo and A. Morelli 170
Hardware implementation of a connectivity preserving shrinking algorithm
   P. C. K. Kwok

Skeletons from snakes
   F. Leymarie and M. D. Levine

Compress images based on fractal dimension
   J. Ma and A. Vepsalainen

Image representation in nonuniform systems
   N. Peterfreund and Y. Y. Zeevi

Contour processing distance transforms
   I. Ragnemalm

Extended neighborhoods in the hexagonal grid: a parallel algorithm to get a line pattern with limited cardinality
   G. Sanniti di Baja and O. Talamo

Application of Delaunay triangulation in image coding
   Z. Y. Lu

IMAGE DESCRIPTION AND RECOGNITION

Efficient processing of 2-D images (Invited lecture)
   D. Rutovitz

Feature extraction from biological images
   L. Abramo and E. Ardizzone

2D recognition of partially overlapped objects using photometric approach
   G. Attolico, L. Caponetti, G. Muscillo and E. Stella

A strategy based on fuzzy set theory for similarity judgement between structures
   E. Binaghi, A. Della Ventura, A. Rampini and R. Schettini

Using skeletons for OCR
   G. Boccignone, A. Chianese, L. P. Cordella and A. Marcelli

Pictorial entity indexing by shape descriptions
   G. Bordogna, P. Carrara, I. Gagliardi, D. Merelli, P. Mussio, F. Naldi, M. Padula and M. Protti
Description-based indexing of ECG

A structural description method for OCR
A. Chianese, L. P. Cordella, M. De Santo and M. Vento

A heuristic matcher of ARG graphs for object recognition
A. Chianese, M. De Santo and M. Vento

An application-independent knowledge-based framework for complex image recognition
S. Dellepiane, C. Regazzoni, S. B. Serpico and G. Vernazza

Linear features extraction in remotely sensed images using a skeletonization approach
G. Farella and A. Mori

The local form – a new method for contour segmentation
S. Frydrychowicz

Ambiguous patterns: investigation on their properties
S. Impedovo, M. Castellano, G. Dimauro and G. Pirlo

Region organization in two-dimensional shapes
Y. Ito, K. Abe and C. Arcelli

Isolation and identification of abutting and overlapping objects in binary images
O. Kübler, F. Klein, R. Ogniewicz and U. Kienholz

Tools for shape complexity evaluation and associated decomposition processes
A. Montanvert and D. Adelh

A similarity retrieval method for line drawing image databases
K. Tanabe and J. Ohya

The application of dynamic programming to object identification
M. Varga, A. Sleigh and R. Series

3-D IMAGE PROCESSING AND ANALYSIS

Development of a trainable machine-vision inspection system
(Invited lecture)
H. Freeman
Object recognition based on hypothesis generation and verification strategy
  K. Arakawa and H. Kaneko 389

3-D scene reconstruction from multiple 2-D views
  E. Ardizzone, M. A. Palazzo and F. Sorbello 394

Binocular motion and structure from monocular motion and structure
  J. L. Barron, A. D. Jepson and J. K. Tsotsos 399

Reconstructing three-dimensional shapes through Euler operators
  E. Bruzzone, L. De Floriani and E. Puppo 407

Object recognition using inexact matching of 3-D graphs
  J. Buurman and R. P. W. Duin 415

Identification of 3-D surface primitives using structured light
  C. Cassolino and F. Mangili 420

Automatic tailoring of vision systems
  U. Cei and P. Cordini 425

Surface recovering by local shading analysis
  M. T. Chiaradia, A. Distante, R. Mugnuolo and E. Stella 430

Visibility characteristics of grey-scale images
  L. De Floriani, G. Nagy and P. Jeanne 435

Group-theoretic analysis of local flow characteristics while visually tracking a textured surface
  R. Eagleson and T. Caelli 443

On computing stable surface descriptions from range data
  F. P. Ferrie and J. Lagarde 451

Detection of local symmetries in multi-dimensional images
  O. Hansen and J. Bigün 459

Digitized images and patterns of perspective transformations

3-D surface characterization
  S. Losito, M. Iannotta, G. Pasquariello and G. Sylos Labini 470

Matching overlapping objects in 3-D scene to model-base under a heuristic search strategy
  S. W. Lu 478
Computing optical flow with medianess
  J. Ma
  483

3D scene modeling based on a generic model
  T. Shakunaga
  493

LOAS: automatic site localisation and orientation using a 3D model
  P. Thevenoux, B. Zavidovique and G. Stamon
  501

IP SYSTEMS AND APPLICATIONS

Document analysis and optical character recognition
  (Invited lecture)
  G. Nagy
  511

DIMES: Diagnostic imaging in mammography using expert systems
  K. Ahmad, P. Mosconi, L. Lombardi, J. Price and P. Horton
  530

Applications of signature analysis by computer and the consequence of its possible misuse
  M. Ammar
  535

Towards an evaluation of an experimental OCR system by means of a complex document
  G. Boccignone, L. Freina, S. Mogliotti and M. R. Spada
  543

An image interpretation management system
  P. Bottoni, P. Mussio, M. Protti and A. Rossello
  551

Automatic method for cloud analysis from monochromatic satellite pictures
  G. Brunet and J. Devars
  556

A new technique to measure the performances of an imaging system
  E. Bussoletti, G. Longo, L. Errico and C. Fusco
  563

An image processing system based on object oriented design
  V. Cappellini and A. Del Bimbo
  570

Automatic visual inspection of textured textiles
  P. Dewaele, L. Van Gool, P. Wambacq and A. Oosterlinck
  575

Pictorial information retrieval with uncertain knowledge
  V. Di Gesù, M. C. Maccarone, D. Ponz, D. Tegolo and M. Tripiciano
  583

A thin lines based approach to PCB visual inspection
  L. Esposito, M. Frucci and A. Marcelli
  590
Digital integration and analysis of multiple images for mineral resource mapping  
A. G. Fabbri

Segmentation of 3D magnetic resonance data  
G. Gerig and R. Kikinis

Decision making process in a signature verification system  
S. Impedovo, M. Castellano, G. Dimauro and G. Pirlo

Recent developments of the optical character reading systems  
S. Impedovo, L. Ottaviano and S. Occhionegro

The RESEDA Project – a knowledge based approach to extracting environmental information from remote sensor data  
W. F. Riekert

Computer identification and matching of circuit diagrams with PC boards  
J. T. Tou and K. C. Fan

Hybrid processing of images for territory monitoring  
A. M. Visin, M. Carosella, M. Busillo and L. Campanelli

SPECIAL ALGORITHMS AND ARCHITECTURES

Massively parallel architectures for cellular logic image processing (Invited lecture)  
R. P. W Duin and E. R. Komen

Geometry constraints and limited memory for the generalized-Hough transform  
M. G. Albanesi and M. Ferretti

Global transforms in real time with the Functional Low Level Image Processor (FLLIP)  
E. Allart and B. Zavidovique

Parallel implementation of a skeletonizing algorithm on a MIMD multiprocessor system  
A. Anzalone, C. Arcelli, A. Machi, G. Sanniti di Baja and O. Talamo

Study of workload partitioning on a PRAM_CREW multiprocessor system performing low_mid level image processing tasks  
A. Anzalone, G. Gugliotta and A. Machi

Fast parallel algorithms for image thresholding  
G. Bongiovanni, A. Giustiniani, S. Levialdi and E. Nulli Gabbiani
Using resolution pyramids to efficiently store distance transforms of arbitrary size
G. Borgefors

Real-time processing architectures in ground surveillance systems
S. Bottalico, F. de Stefani and F. Imelio

Stereo vision in multi-resolution
V. Cantoni, A. Griffini and L. Lombardi

The medial axis transform on a pyramid architecture
L. Cinque, C. Guerra and S. Levialdi

Parallel implementation of a region merging algorithm on a pyramid machine
Ph. Clermont, A. Mérigot, J. C. Roussel and B. Zavidovique

Object recognition strategy in a multi-resolution system
G. Cova, A. Griffini and L. Lombardi

A dataflow image processing system TIP-4
Y. Fujita, M. Iwashita and T. Temma

A multigranularity massively parallel architecture for image understanding
A. Giordano, E. I. Noviello, C. Sanges and R. Vaccaro

Neural network models of perceptual alternation of ambiguous patterns
F. Masulli, M. Riani and E. Simonotto

Designing a VLSI processing element chip for pyramid computer SPHINX
Y. Ni, A. Merigot and F. Devos

Architectures for image coding using adaptive vector quantization
S. Panchanathan and M. Goldberg

Systolic algorithms for VLSI geometry checking
N. Petkov

String processing algorithms and architectures for digital curves analysis
F. Sloboda and J. Prieel