GENERAL CHAIR
Bir Bhanu
PROGRAM CO-CHAIRS
Chuck Dyer
Katsushi Ikeuchi
TUTORIALS CHAIR
Anil Jain
FINANCE CHAIR
Ping Liang
LOCAL ARRANGEMENTS CHAIR
Bahram Parvin
PROGRAM COMMITTEE
P. Anandan
Harlyn Baker
Paul Besl
Aaron Bobick
Kim Boyer
Chris Brown
Roland Chin
Laurent D. Cohen
Larry Davis
Sven Dickinson
Robert P. W. Duin
James S.Duncan
Michael A. Gennert
Dmitri Goldgof
Gregory D. Hager
Allen Hanson
Martial Hebert
Seth Hutchinson
Dan Huttenlocher
Anil Jain
Sing Bing Kang
Rangachar Kasturi
Josef Kittler
Kyros Kutulakos
Yvan G. Leclerc
Sang Wook Lee
Jim Little
Dimitri N. Metaxas
Shree Nayar
Randal C. Nelson
H. Keith Nishihara
Leslie Novak
Bahram Parvin
Rosalind W. Picard
Jean Ponce
Brent Seales
I. Sethi
Mubarak Shah
Amnon Shashua
Chuck Stewart
George Stockman
Rick Szeliski
John Tsotsos
Richard Weiss
Larry Wolff
Gabriel Taubin
Massimo Tistarelli
Isaac Weiss
Zhengyou Zhang
Andrew Zisserman

Advance Program

IEEE Computer Society Conference on

COMPUTER VISION AND PATTERN RECOGNITION

Hotel Nikko
San Francisco, California
June 16-20, 1996

Inside...Latest info on the CVPR program, tutorials and workshops.

TUTORIALS

- Shape Representations for Object Recognition
- Medical Image Analysis
- Content-Based Retrieval for Image and Video
- Genetic Algorithms and Genetic Programming

WORKSHOPS

- Function, Formation and Facilitation
- Mathematical Methods in Biomedical Image Analysis

Sponsored by: IEEE Computer Society Technical Committee PAMI

IEEE COMPUTER SOCIETY 50 YEARS OF SERVICE •1946-1996

"The Computer Society strives to be the leading provider of technical information and services to the world's computing professionals."
-Computer Society Vision Statement

CVPR `96 REGISTRATION FORM - Register Today!

IEEE Computer Society Conference on Computer Vision and Pattern Recognition
June 16-20, 1996 • San Francisco, California

(Please photocopy this form and complete one for each person attending.)
Type or print name exactly as it should appear on your name badge.

Name: *(Last, First, M.I.)* _____ Organization: _____

Address: _____
New Address? ❒ *yes* ❒ *no*

City/State/Postal Code/Country_____

Telephone: *(Business)*_____ *(Home)*_____

FAX:_____ E-Mail:_____

Do you have any special needs?_____

Do not include my name and address on ❒ *non-society mailing lists* ❒ *meeting attendee lists.*

CONFERENCE REGISTRATION

Full conference registration includes all conference sessions, conference proceedings, reception, refreshment breaks, banquet and entertainment. Student registration includes all conference sessions, conference packet, conference proceedings, reception and refreshment breaks. Student registration does not include banquet. *Registrations received after 5/31/96 will be processed on-site only. Written requests for refund must be received by 5/31/96. All cancellations are subject to a $50 processing fee.* ***Registrations will not be accepted without payment.***

	Before 5/17	After 5/17
Member	❒ $340	❒ $425- *IEEE Computer Society Member or IEEE Member #:*_____
Non-Member	❒ $450	❒ $550
Full-time Student	❒ $150	❒ $200- *must show student ID.*
Extra Banquet Ticket	❒ $ 50	❒ $ 55

TUTORIAL REGISTRATION

	Before 5/17	After 5/17
Member	❒ $160	❒ $195
Non-Member	❒ $200	❒ $245
Student Member	❒ $100	❒ $140

Number of Tutorials _____ at $_____ = $_____

Please indicate the tutorial(s) you wish to attend:
- ❒ Tutorial 1: Shape Representations for Object Recognition
- ❒ Tutorial 2: Medical Image Analysis
- ❒ Tutorial 3: Content-Based Retrieval for Image and Video
- ❒ Tutorial 4: Genetic Algorithms and Genetic Programming

METHOD OF PAYMENT - *Payment must be enclosed - registration forms will not be accepted without payment.*
Total amount enclosed: $_____
Make check *(U.S. banks only)* payable to: IEEE Computer Society
❒ Personal Check check #_____ Company check #_____ ❒ Purchase Order: *(U.S. Government only-original must be enclosed.)*
❒ Credit Card: ❒ Visa ❒ MasterCard ❒ American Express ❒ Diners Club

Card Number_____ Exp. Date _____

Signature of Card holder: _____

Card holder Name: *(please print)*_____

Workshop Registration:

- Function, Formation and Facilitation - Please refer to the World WideWeb at: *http://www.cs.wisc.edu/cvpr96/#Workshops* or send email to *janice@cfar.umd.edu.*
- Mathematical Methods in Biomedical Image Analysis-Please refer to the World Wide Web page at: *http://noodle.med.yale.edu/mmbia*

Easy ways to register:

1. Mail to:
IEEE Computer Society
attn: CVPR Registration
1730 Massachusetts Avenue, N.W.
Washington, DC 20036-1992

2. Fax to:
202-728-0884
credit card payments only

3. World Wide Web Registration: *click on "Registration"*
http://www.cs.wisc.edu/cvpr96/

For more information, please call 202-371-1013. Sorry, no phone registrations.

General Information

Hotel Nikko (*conference hotel)

Situated just two blocks from Union Square at 222 Mason Street, Hotel Nikko San Francisco, conference site for CVPR '96, is conveniently located just two blocks from Union Square - the heart of San Francisco. Cable cars, theatres and the city's finest shopping areas are just steps away. The hotel offers such amenities as Cafe 222, 24-hour room service, the Fountain Lounge and Sushi Bar and a complete fitness center with glass enclosed pool. Rooms offer extra large bathrooms with separate tubs and showers, irons and ironing boards and all direct dial phones with complimentary 800 and credit card calls. Concierge, Guest Relations and a complete Business Center offer additional services to help travelers with everything from balloon rides in Napa to the sending of faxes. For reservations call 1-800-654-5687 (inside U.S.) or +1-415-394-1111.

The Hotel Richelieu (six blocks from Hotel Nikko)

Built in 1908, The Hotel Richelieu is a charming Victorian style hotel. Centrally located in Downtown San Francisco just blocks from the Symphony Hall Opera House and Civic Center area. The California Street Cable Car line puts Union Square, Fisherman's Warf, Chinatown, the Embarcadero and the Financial District all within minutes from the hotel. For reservations call 1-800-295-RICH or 1-415-673-4711. Student room rate $69/day, plus 12% tax, single or double occupancy.

Housing at University of California, Berkeley

A block of rooms at the University of California, Berkeley, will be available at the Summer Visitor Housing, 2424 Channing Way, Berkeley. Rooms will be held until May 16; after that date rooms may be reserved on a space available basis. Transportation from Berkeley to the conference is the responsibility of the individual (contact Conference Services at the address below for information). Room rates are not fixed yet, but will not be more than 5% higher than the current rates of $50/day for double occupancy, and $38/day for single occupancy. To request reservations and obtain more information, contact the following office by telephone, mail or fax. Be sure to identify yourself as a participant of CVPR '96
Before June 1: *Conference Services, 2601 Warring St., Berkeley, CA 94720-2288, Tel: 510-642-4444, Fax: 510-642-4888.* June 1 and later: *Summer Visitor Housing,Unit 3 Residence Halls, 2400 Durant Ave., Berkeley, CA 94720-2276, Tel: 510-642-5796, Fax: 510-642-4888.*

Airport to Hotel

The "SFO Airporter" can conveniently provide transportation from San Francisco International Airport to downtown hotels. The blue and red buses and mini-vans pick up on the lower level directly outside of the baggage claim area. Look for the blue posts in the center island between the two lanes of traffic. Tickets can be purchased on the bus from the driver when you board. Both of the "SFO Airporter"'s routes (Union Square and Downtown) stop at the Nikko Hotel as well as other nearby hotels. An SFO Airporter departs every 15 minutes from the airport from 6:00 AM to 11:00 PM. The cost is $9 one-way or $15 round-trip for adults; children 2-16 are $5 one-way. On-call service is available for smaller boutique hotels. For additional information call: 415-495-8404. Airport Minivans provide door-to-door service between the airport and hotels. Fares range from $9-$12 per person one way. Taxi fares vary, but average $30 from airport to downtown.

United Airlines - Official CVPR Carrier

CVPR'96 attendees can take advantage of United Airlines' agreement with the IEEE Computer Society to obtain a 5% discount off of ticket fares at the time of purchase or a 10% discount off of fares in effect when tickets are purchased 7 days in advance.

Reservations and schedule information may be obtained by calling the United Meetings desk at 1-800-521-4041 and referencing Meeting ID Code 563YD. The Meeting desk hours are Monday through Sunday, 7:00 a.m. to 10:00 p.m. ET. Qualified travel dates: June 13 - 23, 1996.

Avis and Alamo rental car companies will offer to our attendees discounts of 10% off of the applicable rental rates when reservations are made in conjunction with United Airlines air reservations.

IEEE COMPUTER SOCIETY
50 YEARS OF SERVICE • 1946-1996

1730 Massachusetts Ave., N.W.
Washington, DC 20036-1992

Non Profit Org.
U.S. Postage
Paid
Baltimore, MD
Permit # 4738

tion"

"The Computer Society strives to be the leading provider of technical information and services to the world's computing professionals."
-Computer Society Vision Statement

TUTORIALS & WORKSHOPS
June 16, 17, 21 & 22 1996

TUTORIALS

TUTORIAL 1
SHAPE REPRESENTATIONS FOR OBJECT RECOGNITION

Sunday, June 16
8:00 a.m. - 12:15 p.m.,
Break 10:00 a.m. - 10:15 a.m.

Benjamin B. Kimia, *Brown University*

ABSTRACT: Shape representation plays a key role in object recognition. In this tutorial we will cover several approaches to shape representation. The presentation is organized around a classification of these approaches along three axes:

1) whether they are based on extrinsic primitives, such as superquadrics or based on intrinsic geometric measurements, such as the Extended Gaussian Image;

2) whether they are local, such as those based on measures of curvature, or are global, e.g. those based on moments;

3) whether they are based on parts or based on deformations. When appropriate, for each approach we will discuss the issue of how to derive such representations directly from the image, e.g. using active contours. Finally, we will discuss the suitability of each representation under visual transformations such as occlusion, object deformation, movement of parts, changes in the lighting condition, changes in viewing.

TUTORIAL 2
MEDICAL IMAGE ANALYSIS

Sunday, June 16
1:00 p.m. - 5:15 p.m.,
Break 3:00 p.m. - 3:15 p.m.

Torfinn Taxt M.D., Ph.D. and Arvid Lundervold M.D., Ph.D., *Biomedical Imaging Group, University of Bergen, Norway*

ABSTRACT: The tutorial will have a strong emphasis on medical ultrasound imaging and medical magnetic resonance imaging. These two modalities are, except for X-ray imaging, the most important imaging modalities in medicine. In contrast to X-ray imaging modalities, both the ultrasound and MR imaging modalities are going through a dramatic expansion in their application areas and are areas of very intense research and commercial interest.

The tutorial is split in four parts. The first part is an introduction giving relevant background material. The second part is dedicated to medical ultrasound imaging and the third part is concerned with medical magnetic resonance imaging. The fourth and final part concentrates on future trends in medical image analysis with particular emphasis on ultrasound imaging and magnetic resonance imaging.

TUTORIAL 3
CONTENT-BASED RETRIEVAL FOR IMAGE AND VIDEO

Monday, June 17
8:00 a.m. - 12:15 p.m.,
Break 10:00 a.m. - 10:15 a.m.

Rosalind W. Picard, *MIT Media Lab*

ABSTRACT: Content-based retrieval is in increasing demand, with applications spanning consumer imagery, medical research, film-editing, advertising, and more. This tutorial will provide an understanding of the current research problems in this area, focusing on pattern recognition and computer vision solutions for representation and recognition of image and video content. Specifics to be addressed include: techniques for similarity comparisons based on texture, color, shape and combinations of features, methods which operate on compressed data, online learning algorithms for assisting in classification and annotation, online learning of subjective labels and user preferences, and methods for organizing video and image collections to facilitate browsing, retrieval, and annotation. Applications and existing systems will also be discussed.

TUTORIAL 4
GENETIC ALGORITHMS AND GENETIC PROGRAMMING

Monday, June 17
1:00 p.m. - 5:15 p.m.,
Break 3:00 p.m. - 3:15 p.m.

John Koza, *Stanford University*

ABSTRACT: This tutorial will introduce participants to the ideas and applications of genetic algorithms and genetic programming.

The genetic algorithm is a domain independent search technique that solves, or approximately solves, problems based on the mechanics of Darwinian natural selection and genetics. Genetic algorithms are receiving increased attention in many areas, including pattern recognition. The tutorial will introduce the mechanics of a simple genetic algorithm and consider the theory of implicit parallelism that underlies its problem-solving power. A parade of current applications will be reviewed.

Genetic programming is a domain-independent technique for automatic programming that evolves a computer program that solves, or approximately solves, problems.

Genetic programming has found applications in a wide variety of different areas including system identification, control pattern recognition, modeling, design of electrical circuits, forecasting, empirical discovery, data mining, robotics, automatic programming of multi-agent strategies, distributed artificial intelligence, game theory, optimization, and computational aspects of molecular biology.

WORKSHOPS

FUNCTION, FORMATION AND FACILITATION

Monday, June 17, 1996
8:00 a.m. - 5:00 p.m.

Organizers:
Azriel Rosenfeld, *University of Maryland*
Ehud Rivlin, *Technion and University of Maryland*

Objects and structures have functionalities for their users. This workshop will present examples of current work on the inference of functionality from formations of parts and from the nature of the actions that are facilitated. For information about the Workshop program, registration, etc., see http://www.cs.wisc.edu/cvpr96/#Workshops, or send email to janice@cfar.umd.edu.

MATHEMATICAL METHODS IN BIOMEDICAL IMAGE ANALYSIS

Friday & Saturday, June 21 & 22, 1996
8:00 a.m. - 5:00 p.m.

Organizer:
Amir Amini, *Yale University*

The workshop program will consist of contributed and invited papers on all aspects of mathematical approaches to biomedical image analysis. The program will cover the following topics: medical image registration, deformable models and deformation maps for medical imagery, motion analysis of medical images, surface and volume models for anatomical shapes, and multimodality and multi-dimensional image analysis. For information about the Workshop program, registration, etc., see the homepage at URL http://noodle.med.yale.edu/mmbia.

TECHNICAL PROGRAM • June 18-20, 1996

TUESDAY, JUNE 18

8:00 - 8:10 Opening Remarks & Announcements

8:10 - 9:10 **Invited Talk:** Progress in Machine Vision for Motion Control- *Professor E.D. Dickmanns, Universitat der Bundeswehr, Munchen, Germany*

9:10 - 10:00 Coffee Break + Poster TP1, TP2, TP3

10:00 - 11:40 Two Parallel Sessions

Session TM1:
Segmentation and Low-Level Processing

• A Constrained Optimization Method for Bayesian Image Restoration and Segmentation- *S Z. Li (Nanyang Technological Univ.,Singapore)*
• Sparse Representations for Image Decomposition- *Mike Donahue (Univ. of Minnesota), Tyng-Luh Liu, Davi Geiger and Robert Hummel (Courant Institute)*
• Extracting Salient Curves from Images: An Analysis of the Saliency Network- *T.D. Alter (MIT AI Lab), Ronen Basri (The Weizmann Inst. of Science, Israel)*
• Blurring Strategies for Image Segmentation Using a Multiscale Linking Model- *Koen L. Vincken, Wiro J. Niessen, Andre S. E. Koster and Max A. Viergever (University Hospital Utrecht, The Netherlands)*
• Local Scale Control for Edge Detection and Blur Estimation- *James H. Elder (NEC Research Institute), Steven W. Zucker (McGill University, Canada)*

Session TM2:
Object Recognition and Pose Recovery

• Recognizing 3D Objects by Generating Random Actions- *Stephane Herbin (Centre de Mathematiques, France)*
• View Point Variation in the Nose Sensitivity of Pose Estimation- *Claus B. Madsen (Aalborg Univ., Denmark)*
• Gauging Relational Consistency and Correcting Structural Errors- *Richard C. Wilson and Edwin R. Hancock (Univ. of York, UK)*
• Eigenfeatures for Planar Pose Measurement of Partially Occluded Objects- *John Krumm (Sandia National Laboratories)*
• Finding Correspondence Points Based On Bayesian Triangulation- *Anand S. Bedeker and Robert M. Haralick (Univ. of WA)*

11:40 - 1:00 Lunch Break

1:00 - 2:40 Two Parallel Sessions

Session TN1:
Human and Articulated Motion

• Active Face Tracking and Pose Estimation in an Interactive Room- *Trevor Darrell, Baback Moghaddam and Alex P. Pentland (MIT Media Lab)*
• 3D Model-Based Tracking of Humans in Action: A Multi-View Approach- *D. M. Gavrila and L.S. Davis (Univ. of MD)*
• Model-Based Estimation of 3D Human Motion with Occlusion Based on Active Multi-Viewpoint Selection- *Ioannis A. Kakadiaris and Dimitri Metaxas (Univ. of PA)*
• Hand Segmentation Using Learning-Based Prediction and Verification for Hand-Sign Recognition- *John Weng and Yuntao Cui (Michigan State Univ.)*
• Further Constraints on Visual Articulated Motions- *D. Sinclair and K. Zesar (Technical University Graz, Austria)*

Session TN2:
Target Recognition and Applications

• SAR Target Recognition Based on Invariant Histograms and Deformable Template Matching- *K. Ikeuchi, T. Shakunaga, M. Wheeler, T. Yamazaki (CMU, USA)*
• Modeling Clutter and Context for Target Detection in Infrared Images- *Songnian Rong and Bir Bhanu (Univ. of CA)*
• Multi-Stage Target Recognition Using Modular Vector Quantizers and Multi-Layer Perceptions- *Lipchen A. Chan and Nasser M. Nasrabadi (State University of NY at Buffalo)*
• On a Spectral Attentional Mechanism- *Philippe Burlina, Bruce Lin and Rama Chellappa (Univ. of MD)*
• A Polarization Phase-Based Method for Material Classification and Object Recognition in Computer Vision- *Hua Chen and Lawrence B. Wolff (Johns Hopkins Univ.)*

2:40 - 3:20 Coffee Break + Poster TP1,TP2, TP3

3:20 - 5:00 Two Parallel Sessions

Session TA1:
Contour Reconstruction

• A Common Framework for Curve Evolution, Segmentation and Anisotropic Diffusion *Jayant Shah (Northeastern University)*
• Comparison of Edge Detectors: A Methodology and Initial Study- *Mike Heath, Sudeep Sarkar, Thomas Sanocki and Kevin Bowyer (Univ. of South Florida)*
• A Hierarchical Approach to High Resolution Edge Contour Reconstruction- *Stefano Casadei and Sanjoy Mitter (MIT)*
• Salient and Illusory Surfaces- *Davi Geiger (Courant Institute, NYU), Krishnan Kumaran (Department of Physics), Leonid Gurvits (NEC Research Institute)*
• Local Parallel Computation of Stochastic Completion Fields- *Lance R. Williams and David W. Jacobs (NEC Research Institute)*

Session TA2:
Panel 1: Education for Computer Vision
Organizers: George Stockman, Michigan State Univ., Kevin Bowyer, Univ. of South Florida

5:30 - 7:00 Reception

9:00 PAMI Technical Committee Meeting

WEDNESDAY JUNE 19

8:00 - 9:00 **Invited Talk**: Human Assisted Computer Vision and Artificial Intelligence- Why Not? *Dr. Dragutin Petkovic, IBM Almaden Research Center*

9:00 - 9:50 Coffee Break + Poster WP1, WP2, WP3

9:50 - 11:30 Two Parallel Sessions

Session WM1:
Active and Real-Time Vision

• Controlled Camera Motions for Scene Reconstruction and Exploration- *Eric Marchand and Francois Chaumette (Univ. of Beaulieu, France)*
• Optimal Servoing for Active Foveated Vision- *Ehud Rivlin and Hector Rotstein (Israel Institute of Technology, Israel)*
• Calibration of a Foveated Wide Angle Lens on an Active Vision Head- *L. Berthouze, S. Rougeaux, Y. Kuniyoshi and F. Chavand (Electrotechnical Laboratory, Japan)*
• Incremental Focus of Attention for Robust Visual Tracking- *Kentaro Toyama and Gregory D. Hager (Yale University)*
• A Stereo Machine for Video-Rate Dense Depth Mapping and its New Applications- *T. Kanade, A. Yoshida, K. Oda, H. Kano and M. Tanaka (CMU)*

Session WM2:
Face Detection and Recognition

• Neural Network-Based Face Detection- *H. Rowley, S.Baluja and T. Kanade (CMU)*
• Feature-Based Face Recognition Using Mixture Distance- *Ingemar J. Cox and Peter*

N. Yianilos (NEC Research Institute), Joumana Ghosn (University of Montreal, Canada)

• Convolutional Neural Networks for Face Recognition- *Steve Lawrence and Ah Chung Tsoi (Univ. of Queensland, Australia),C. Lee Giles (NEC Research)*

• Recognition of Flexible Planar Objects- *M.C. Burl (CA Inst. of Technology), P.Perona (Univ. di Padova, Italy),T.K. Leung (Univ. of CA at Berkeley)*

• A Theory for the Integration of Optical Flow and Deformable Models: Application to Human Face Shape and Motion Estimation- *Douglas DeCarlo and Dimitri Metaxas (Univ. of PA)*

11:30 - 1:00 Lunch Break

1:00 - 2:40 Two Parallel Sessions

Session WN1:
Matching and Calibration

• Graph Matching by Graduated Assignment- *Steven Gold and Anand Rangarajan (Yale University)*

• Non-Rigid Matching Using Demons- *Jean-Phillipe Thirion (INRIA, France)*

• Determining Correspondences and Rigid Motion of 3D Point Sets with Missing Data- *Xiaoguang Wang, Yong-Qing Cheng Robert T. Collins, and Allen R. Hanson (Univ. of Massachusetts)*

• Structure from Multiple 2D Affine Correspondences without Camera Calibration- *Haim Schweitzer (The Univ. of TX at Dallas) Radha Krishnan (Univ. of MD)*

• From Projective to Euclidean Reconstruction- *Frederic Devernay and Olivier Faugeras (INRIA, France)*

Session WN2:
Shape Representation

• What is the Set of Images of an Object Under All Possible Lighting Conditions?- *Peter N. Belhumeur and David J. Kriegman (Yale University)*

• Inference of Segmented, Volumetric Shape from Intensity Images- *Parag Havaldar and Gerard Medioni (University of Southern California)*

• Mirror and Point Symmetry Under Perspective Skewing- *L. J. van Gool and Marc Proesmans (K.U. Leuven, Belgium), Theo Moons (Belgian NFWO, Belgium)*

• Global Models with Parametric Offsets as Applied to Cardiac Motion Recovery- *Thomas O'Donnell (Columbia University), Terrance Boult (Lehigh University,), Alok Gupta (Siemens Corp Research, Inc.,)*

• MUSE: Robust Surface Fitting Using Unbiased Scale Estimates- *J.V. Miller and C.V. Stewart (Rensselaer Polytechnic Inst.)*

2:40 - 3:20 Coffee Break + Poster WP1, WP2, WP3

3:20 - 5:00 Two Parallel Sessions

Session WA1:
Motion Estimation and Structure from Motion

• Skin and Bones: Multi-layer, Locally Affine, Optical Flow and Regularization with Transparency- *Shanon Ju (University of Toronto, Canada), Michael J. Black (Xerox Palo Alto Research Center), Allan D. Jepson (Canadian Inst. for Advanced Research, Canada)*

• Comparison of Approaches to Egomotion Computation- *Tina Y. Tian, Carlo Tomasi and David J. Heeger (Stanford University)*

• A Unified Mixture Framework for Motion Segmentation: Incorporating Spatial Coherence and Estimating the Number of Models- *Edward H. Adelson and Yair Weiss (MIT)*

• Structure and Motion of Curved 3D Objects from Monocular Silhouettes- *B. Vijayakumar and David J. Kriegman (Yale Univ.), Jean Ponce (Univ. of Illinois)*

• Provably Correct Algorithms for Multi-Frame Structures from Motion: The Case of Constant Translation Direction- *John Oliensis (NEC Research Institute)*

Session WA2:
Panel 2: Industry Needs for Computer Vision and Pattern Recognition- *Organizer: Bruce Flinchbaugh, Texas Instruments*

7:00 - 10:00 Banquet ~ Cruise on the San Francisco Bay

THURSDAY, JUNE 20

8:00 - 9:00 **Invited Talk:** High Resolu tion PET and High Field Magnetic Resonance in Study of Human Physiology and Disease - *Professor Thomas F. Budinger, M.D., Ph.D. Univ. of CA and Lawrence Berkeley Laboratory*

9:00 - 9:50 Coffee Break + Poster RP1, RP2

9:50 - 11:30 Two Parallel Sessions

Session RM1:
Stereo

• Stereo Matching with Non-Linear Diffusion- *Daniel Scharstein (Cornell University), Richard Szeliski (Microsoft Corporation)*

• Ordinal Measures for Visual Correspondence- *Dinkar N. Bhat and Shree K. Nayar (University of Columbia)*

• A Space-Sweep Approach to True Multi-Image Matching- *Robert T. Collins (Univ. of MA)*

• 3D Scene Data Recovery Using Omnidirectional Multibaseline Stereo- *Sing Bing Kang (Digital Equipment Corp.), Richard Szeliski (Microsoft Corp.)*

• Occlusion Detectable Stereo — Occlusion Patterns in Camera Matrix- *Yuichi Nakamura, Tomohiko Matsuura, Kiyohide Satoh and Yuichi Ohta (University of Tsukuba, Japan)*

Session RM2:
Systems and Integration

• Paranoramic Image Acquisition- *Arun Krishnan and Narendra Ahuja (Univ. of IL)*

• Runway Obstacle Detection By Controlled Spatiomatic Image Flow Disparity- *Sanghoon Sull and Banavar Sridhar (NASA Ames Research Center)*

• Combination of Multiple Classifiers Using Local Accuracy Estimates- *Kevin Woods (University of South Florida), W. Philip Kegelmeyer, Jr., (Sandia National Labs), Kevin Bowyer (University of South Florida)*

• Efficient Image Gradient-Based Object Localization and Recognition- *T.N. Tan, G.D. Sullivan and K.D. Baker (Univ. of Reading, UK)*

• Real Time Tracking of Image Regions with Changes in Geometry and Illumination- *Gregory Hager and Peter Belhumeur (Yale Univ.)*

11:30 - 1:00 Lunch Break

1:00 - 2:20 Two Parallel Sessions

Session RN1:
Texture and Shading

• Towards Accurate Recovery of Shape from Shading Under Diffuse Light- *A. James Stewart (University of Toronto, Canada), Michael S. Langer (McGill University, Canada)*

• Illumination and Geometry Invariant Recognition of Texture in Color Images- *Lizhi Wang and Glenn Healey (Univ. of CA)*

• Texture Features and Learning Similarity- *W.Y. Ma and B.S. Manjunath (Univ. of CA at Santa Barbara)*

• Minimal Operator Set for Texture Invariant Depth from Defocus- *Masahiro Watanabe and Shree K. Nayar (Columbia University)*

Session RN2:
Image Database and Document Analysis

• Video Browsing Using Edges and Motion- *Ramin Zabih and Justin Miller (Cornell University)*

• Interactive Learning with a Society of Models- *T.P Minka and R.W. Picard (MIT Media Lab)*

• Dealing with Occlusions in the Eigenspace Approach- *Ales Leonardis and Horst Bischof (Technical Univ. Vienna, Austria)*
• Recognition of Handwritten Phrases as Applied to Street Name Images- *Gyeonghwan Kim and Govindaraju Venu (CEDAR, SUNY at Buffalo)*

2:20 - 3:00 Coffee Break + Poster RP1, RP2

3:00 - 4:40 Two Parallel Sessions

Session RA1:
Feature Extraction and Detection

• Edge Detection with Automatic Scale Selection- *Tony Lindeberg (Royal Inst. of Tech., Sweden)*
• Parametric Feature Detection- *Shree K. Nayar, Simon Baker and Hiroshi Murase (Columbia University)*
• Quantitative Measures of Change Based on Feature Organization: Eigenvalues and Eigenvectors- *Sudeep Sarkar (University of South Florida), Kim L. Boyer (Ohio St. Univ.)*
• Randomness and Geometric Figures in Computer Vision- *Xavier Pennec and Nicolas Ayache (INRIA, France)*
• Lie Group Theory, Space Variant Fourier Analysis and the Exponential Chirp Transform- *Giorgio Bonmassar and Eric L. Schwartz (Boston Univ.)*

Session RA2:
Panel 3: Content-Based Retrieval: Research Issues and Directions- *Organizer: Rosalind Picard, Media Lab, MIT*

• POSTER PRESENTATIONS

POSTER PRESENTATION TUESDAY, JUNE 18

POSTER SESSION TP1: Shape Representation

• SiteCity: A Semi-Automated Site Modeling System- *Y. Hsieh (Carnegie Mellon University)*
• A Shock Grammar for Recognition- *Kaleem Siddiqi (McGill Univ., CANADA), Benjamin B. Kimia (Brown Univ.)*
• New, Faster, More Controlled Fitting of Implicit Polynomial 2D Curves and 3D Surfaces to Data- *Zhibin Lei and David B. Cooper (Brown University)*
• Affine Invariants Detection: Edges, Active Contours, And Segments- *Peter J. Olver and Allen Tannenbaum (Univ. of Minnesota), Guillermo Sapiro (HP Labs)*
• On 3D Shape Similarity- *H-Y. Shum, M. Hebert and K. Ikeuchi (Carnegie Mellon Univ.)*

POSTER SESSION TP2: Pattern Recognition

• Subpixel Image Registration by Estimating the Polyphase Decomposition of the Cross Power Spectrum- *H. Shekarforoush, M. Berthod and J. Zerubia (INRIA, France)*
• Closed-Loop Object Recognition Using Reinforcement Learning- *Jing Peng and Bir Bhanu (Univ. of CA)*
• A Computational Theory of Visual Rejection- *Simon Baker and Shree K. Nayar (Columbia Univ.)*
• A Robot Clustering Algorithm Based on Competitive Agglomeration and Soft Rejection of Outliers- *Hichem Frigui and Raghu Krishnapuram (University of Missouri)*
• Extraction of Maximal Inscribed Disks from Discrete Euclidean Distance Distance Maps- *Yarong Ge and J. Michael Fitzpatrick (Wake Forest University)*
• Constrained Phase Congruency: Simultaneous Detection of Interest Points and of their Scales- *Daniel Reisfeld (INRIA, France)*
• Nonlinear Shape Restoration for Document Images- *Yun Weng and Qiuming Zhu (Univ. of Nebraska at Omaha)*
• Complexity Analysis of RBF Networks for Pattern Recognition- *L. Sardo and J. Kittler (University of Surrey, UK)*
• Realtime Extraction of Connected Component in 3D Sonar Range Images- *Per G. Auran and Kjell Malvig (The Norwegian Institute of Technology, Norway)*

POSTER SESSION TP3: Applications

• A Framework for Recognizing a Facial Image from a Police Sketch- *Robert G. Uhl Jr. and Niels Da Vitoria Lobo (Univ. of Central FL)*
• Recovery of Global Non-Rigid Motion - A Model Based Approach without Point Correspondence- *Senthil Kumar and Dmitry Goldgof (Univ., of South Florida)*
• Interpreting and Representing Tabular Documents- *Juan F. Arias, Atul Chhabra (NYNEX), Vishal Misra (Univ. of MA at Amherst)*
• Novel Active Vision Based Visual Threat Cue for Autonomous Navigation Tasks- *Sridhar R. Kundur (Florida Atlantic University) Daniel Raviv (NIST, USA)*
• A Competitive Mixture of Deformable Models for Pattern Classification- *Kwok-Wai Cheung, Dit-Yan Yeung and Roland T. Chin (Hong Kong Univ. of Science and Tech.)*
• A Fast and Flexible Statistical Method for Text Extraction in Document Pages- *Pietro Parodi and Giulia Piccioli (Univ. of Genova, Italy)*
• The Use of Hybrid Models to Recover Cardiac Wall Motion in Tagged MR Images- *Gareth Funka-Lea and Alok Gupta (Siemens Corp.)*
• WordSpotting: A New Approach to Indexing Handwriting- *R. Manmatha, Chengfeng Han and E. M. Riseman (Univ. of MA)*
• Bayesian Face Recognition Using Deformable Intensity Surfaces- *Baback Moghaddam and Alex Pentland (MIT), Chahab Nastar (INRIA, France)*
• Similarity Queries in Image Databases- *Simone Santini and Ramesh Jain (Univ. of CA, San Diego)*

POSTER PRESENTATION WEDNESDAY, JUNE 19

POSTER SESSION WP1: Edge, Contour and Surface Detection and Recovery

• Isotropic Corner and Edge Detection- *Jason Merron and Michael Brady (Univ. of Oxford, UK)*
• Isotropic Processing for Gradient Estimation- *Djemel Ziou (University of Sherbrooke, Canada)*
• Global Minimum for Active Contour Models: A Minimum Path Approach- *Laurent Cohen (Universite Paris, France), Ron Kimmel (Univ. of CA at Berkeley)*

• Convexity Analysis of Active Contour Problems- *Chris Davatzikos and Jerry L. Prince (Johns Hopkins University)*
• Vector-Valued Active Contours- *Guillermo Sapeiro (Hewlett Packard)*
• Filters, Random Fields and Maximum Entropy (FRAME) - Towards the Unified Theory for Texture Modeling- *Song Chun Zhu, Y. Wu and David Mumford (Harvard Univ.)*
• Wire Frame and Surface Recovery- *Jiping Lu and Jim Little (Univ.of British Columbia, Canada)*

POSTER SESSION WP2: Active and Real-Time Vision

• Autonomous Recognition: Driven by Ambiguity- *Francesco G. Callari and Frank P. Ferrie (McGill University, Canada)*
• Active Intrinsic Calibration Using Vanishing Points- *Konstanos Daniilidis and Jorg Ernst (Kiel University, Germany)*
• Target Detection in Foveal ATR System- *Sugata Ghosal and Douglas C. McKee (Amherst Systems)*
• An MIMD Computing Platform for a Heirarchical Foveal Machine Vision System- *Fenglei Du, Andrew Izatt and Cesar Bandera (Amherst Systems)*
• Attention Control for Robot Vision- *Carl-Johan Westlius, Carl-Fredrol Westin and Hans Knutsson (Linkoping University, Sweden)*
• Gesture Recognition Using Perseus Architecture- *Roger E. Kahn, Michael J. Swain, Peter N. Prokopowicz and R. James Firby (University of Chicago)*

POSTER SESSION WP3: Physics and Geometry for Low-Level Vision

• Physics-Bases Segmentation: Moving Beyond Color- *B. Maxwell (Carnegie Mellon University), S. Shafer (Microsoft)*
• Using Physics-Based Invariant Representations for the Recognition of Regions in Multispectral Satellite Images- *Glenn Healy and Amit Jain (University of California, Irvine)*
• Recovering Affine Motion and Defocus Blur Simultaneously- *Zarina Myles and Niels Da Vitoria Lobo (University of Central Florida)*
• It -Space Representation of Images and Generalized Edge Detector- *Muhittin Gokmen (Istanbul Technical University, Turkey), Anil K. Jain (Michigan State University)*
• Using a Spectral Reflectance Model for the Illumination-Invariant Recognition of Local Image Structure- *David Slater and Glenn Healey (University of California at Irvine)*
• Epipolar Geometry and Linear Subspace Methods: A New Approach to Weak Calibration- *Jean Ponce and Yakup Genc (Univ. of Illinois at Urbana-Champaign)*
• Shadows and Shading Flow Fields- *Pierre Breton and Steven W. Zucker (McGill University, Canada)*
• Affine Structure and Photometry- *Ruth Rosenholtz and Jan J. Koenderink (Utrecht University, The Netherlands)*

POSTER PRESENTATION THURSDAY, JUNE 20

POSTER SESSION RP1: Motion Analysis

• Robust Recovery of Camera Rotation from Three Frames- *B. Rousso, S. Avidan and S. Peleg (Hebrew University of Jerusalem, Israel)*
• A Factorization Method for Shape and Motion from Line Correspondences- *L. Quan and T. Kanade (Carnegie Mellon University)*
• A Common Framework for Steerability, Motion Estimation and Invariant Feature Detection- *Yacov Hel-Or (NASA Ames Research), Patrick C. Teo (Stanford University)*
• Motion from Fixation- *Stafano Soatto (California Institute of Technology), Pietro Perona (University of Padova, Italy)*
• Reducing Structure from Motion: A General Framework for Dynamic Vision with Experimental Evaluation- *Stefano Soatto (CA Inst. of Technology), Peitro Perona (University of Padova, Italy)*
• Multilinear Forms in the Velocity Case- *Kalle Astrom and Anders Heyden (Lund University, Sweden)*
• Dense Non-Rigid Motion Tracking from a Sequence of Velocity Fields- *Francois G. Meyer, R. Todd Constable, Albert J. Sinusas, James S. Duncan (Yale University)*
• Factorization Methods for Projective Structure and Motion- *Bill Triggs (LIFIA, France)*
• Stereo Vision for View Synthesis- *Daniel Scharstein (Cornell University)*

POSTER SESSION RP2: Recognition and Pose Recovery

• Visual Search in High Dimensions- *Sameer A. Nene and Shree K. Nayar (Columbia University)*
• 3-D Object Pose Estimation by Shading and Edge Data Fusion: Stimulating Virtual Manipulation on Mental Images- *Yoshiko Nomura,Dili Zhang,Yuko Sakaida and Seizo Fujii (Nagoya University, Japan)*
• Combining Grey Value Invariants with Local Constraints for Object Recognition- *Cordelia Schmid and Roger Mohr (LIFIA, France)*
• Recognizing Three Dimensional Objects by Comparing Two-Dimensional Images- *Daniel P. Huttenlocher (Cornell University), Liana M. Lorigo (MIT)*
• Recovering the Viewing Parameter of Random, Translated and Noisy Projections of Asymmetric Objects- *Peter Lauren (Media Cybernetics LP), N. Nandhakumar (University of Virginia)*
• Recognition Via Consensus of Local Moments of Brightness and Orientation- *J. Brian Burns (Teleos Research)*
• Coregistration of Range and Optical Images Using Coplanarity and Orientation Constraints- *Anthony N. A. Schwickerath and J. Ross Beveridge (Colorado State Univ.)*
• Connectionist Networks for Feature Indexing and Object Recognition- *Clark F. Olson (Cornell University)*
• Indexing to 3D Model Aspects Using 2D Contour Features- *Jin-Long Chen and George C. Stockman (Michigan State Univ.)*
• Feature Correspondence by Interleaving Shape and Texture Computations- *David Beymer (Univ. of CA)*