Guest Editors’ Introduction to the Special Section on Award Winning Papers from the IEEE CS Conference on Computer Vision and Pattern Recognition (CVPR)

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We are pleased to present this special section on the award-winning papers from the IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR) 2008, held in Anchorage, Alaska, 23-28 June 2008. CVPR has been a flagship conference representing the state of the art in the field of computer vision and pattern recognition for more than two decades. The CVPR 2008 conference received roughly 1,600 submissions, the highest in its history. A program committee of 474 members and 34 area chairs selected 62 papers for oral presentation (3.8 percent). A separate awards committee consisting of six senior researchers chose eight papers for awards, using information derived from the reviews and the nominations offered by program committee members and area chairs. The program chairs agreed with the committee’s choices for the various categories. The best papers in this special section are those selected for the best overall papers and best student papers among the oral presentations. The authors of these papers were invited to submit extended versions for journal consideration. The journal submissions were subjected to the standard, rigorous *TPAMI* peer review process and were each accepted after relatively minor revisions.

The papers you will find in this special section are:

- O. Woodford, I. Reid, P. Torr, and A. Fitzgibbon, “Global Stereo Reconstruction under Second-Order Smoothness Priors.” Winner of the Best Paper prize. This paper presents a method of stereo reconstruction using second-order priors on the smoothness of 3D surfaces to better model typical scenes. The resulting optimization is shown to be tractable.


- B. Kulis, P. Jain, and K. Grauman, “Fast Similarity Search for Learned Metrics.” Winner of the Best Student Paper prize. The paper presents a scalable image search using learned metrics by encoding the learned metric parameterization into randomized locality-sensitive hash functions leading to improved accuracy.

- K. Ni, A. Kannan, A. Criminisi, and J. Winn, “Epitomic Location Recognition.” Best Student Paper runner-up. This paper presents a method of recognizing location classes using the epitome representation to capture the variations in appearance and shapes of a collection of images taken from a location.

We would like to express our sincere appreciation to our Awards Committee: Eric Grimson (chair), Rama Chellappa, Zhengyou Zhang, Luc Van Gool, Katsushi Ikeuchi, and Jan-Olof Eklundh for their service.

In addition to the best papers from CVPR 2008, we would like to mention the Longuet-Higgins Prize winners, as selected by a special committee of three top researchers. This prize honors those papers from CVPR 1998 having the most influence on the field over the last ten years. The committee identified an initial list of candidates from the most cited CVPR 1998 papers using multiple online citation sources. After deliberating on the relative merits of the most cited papers, they chose the following winners:

- H. Schneiderman and T. Kanade, “Probabilistic Modeling of Local Appearance and Spatial Relationships for Object Recognition.” This paper represented a significant advance in object recognition through probabilistic modeling and multiple-view training, yielding a state-of-the-art face detection technique.

- C. Bregler and J. Malik, “Tracking People with Twists and Exponential Maps.” This was seen as an inspired application of kinematic modeling techniques from robotics to the challenge of tracking people in
motion from a single camera view, including a memorable model-based analysis of the Muylbridge motion study videos.

We would like to thank the Longuet-Higgins Prize Committee, Tomaso Poggio, Andrew Blake, and Demetri Terzopoulos, for their service. It was both a pleasure and an honor to be entrusted with assembling the program of CVPR 2008 on behalf of our scientific community, and we are pleased to offer these articles representing the best art in the field from 2008. We hope you will enjoy reading these extended versions of the best papers from CVPR 2008.

Kim Boyer
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Guest Editors

Kim Boyer received the BSEE (with distinction), MSEEE, and PhD degrees, all in electrical engineering, from Purdue University in 1976, 1977, and 1986, respectively. He is head of the Department of Electrical, Computer, and Systems Engineering at Rensselaer Polytechnic Institute. From 1977 through 1981, he was with Bell Laboratories, Holmdel, New Jersey; from 1981 through 1983, he was with Comsat Laboratories, Clarksburg, Maryland. From 1986-2007, he was with the Department of Electrical and Computer Engineering, The Ohio State University. He is a fellow of the IEEE, a fellow of the IAPR, and a former IEEE Computer Society Distinguished Speaker. Dr. Boyer is also a National Academies Jefferson Science Fellow at the US Department of State, spending 2006-2007 as Senior Science Advisor to the Bureau of Western Hemisphere Affairs. While at the State Department, he studied the impact of technological innovation on economic development in scientifically lagging and scientifically developing countries. He also developed policy recommendations for the use of science and engineering as instruments of diplomacy. He retains his fellowship as a consultant on science and technology policy for the State Department. Dr. Boyer’s research interests include all aspects of computer vision and medical image analysis, including perceptual organization, structural analysis, graph theoretical methods, stereopsis in weakly constrained environments, optimal feature extraction, large modelbases, and robust methods. His current research activities include mapping the surface of the dynamic prelens tear film from interferometric video and intelligent illumination control for phototoxicity mitigation in live cell imaging. Dr. Boyer is treasurer of the International Association for Pattern Recognition, as well as a US delegate to the Governing Board. He is a former associate editor of the IEEE Transactions on Pattern Analysis and Machine Intelligence, area editor of Computer Vision and Image Understanding, associate editor of Machine Vision and Applications, chair of the first two IEEE Computer Society Workshops on Perceptual Organization, was a charter member of the DARPA IUE Technical Advisory Committee, and was a member of the initial ORD RADIUS Technical Oversight Committee. With Kuntal Sengupta, he won the Siemens Best Paper Award at CVPR ’93. In 1995, a student team co-directed by Professor Boyer won the International Unmanned Ground Vehicle Competition for its vision-guided Autonomous Robotic Transporter. In 2002, he was a program chair for Computer Vision and Robotics at ICPR, Quebec. He is a former chair of the IEEE Computer Society Technical Committee on Pattern Analysis and Machine Intelligence. He was the keynote speaker for the 2004 SIBGRAPI conference in Curitiba, Brazil. He was a program chair for CVPR ’08 in Anchorage and is technical chair for both ICPR ‘10 in Istanbul, Turkey, and ICPR ’12 in Tsukuba, Japan. Dr. Boyer has published five books and more than 100 scientific papers. He has lectured in nearly 30 countries around the world. His books include Computing Perceptual Organization in Computer Vision (World Scientific, 1994, with Sudeep Sarkar), Perceptual Organization for Artificial Vision Systems (Kluwer Academic Publishers, 2000, with Sudeep Sarkar), and Robust Range Image Registration: Using Genetic Algorithms and the Surface Interpenetration Measure (2005, with Luciano Silva and Olga Bellon).

Mubarak Shah the Agere Chair Professor of Computer Science, is the founding director of the Computer Visions Lab at the University of Central Florida (UCF). He is a coauthor of three books (Motion-Based Recognition (1997) and Video Registration (2003), and Automated Multi-Camera Surveillance: Algorithms and Practice (2008)), all published by Springer. Dr. Shah is a fellow of the IEEE, IAPR, and SPIE. In 2006, he was awarded a Pegasus Professor award, the highest award at UCF, given to a faculty member who has made a significant impact on the university, has made an extraordinary contribution to the university community, and has demonstrated excellence in teaching, research, and service. He was an IEEE Distinguished Visitor speaker for 1997-2000 and received the IEEE Outstanding Engineering Educator Award in 1997. He received the Harris Corporations Engineering Achievement Award in 1999, the TOKTEN awards from UNDP in 1995, 1997, and 2000; Teaching Incentive Program award in 1995 and 2003, Research Incentive Award in 2003, Millionaires Club awards in 2005 and 2006, University Distinguished Researcher award in 2007, honorable mention for the ICCV ’05 Where Am I? Challenge Problem, and was nominated for the best paper award at the ACM Multimedia Conference in 2005. He is an editor of an international book series on video computing; editor-in-chief of Machine Vision and Applications, and an associate editor of ACM Computing Surveys. He was an associate editor of the IEEE Transactions on Pattern Analysis and Machine Intelligence and a guest editor of the special issue of the International Journal of Computer Vision on video computing.

Tanveer Syeda-Mahmood graduated from the Massachusetts Institute of Technology Artificial Intelligence Lab in 1993 with the PhD degree in computer science. She is a research manager at the IBM Almaden Research Center, where she heads a program on multimodal mining for healthcare data. She worked as a research staff member at the Xerox Webster Research Center, Webster, New York, before joining IBM in 1998. Dr. Syeda-Mahmood led the image indexing program at Xerox Research and was one of the early originators of the field of content-based image and video retrieval. Currently, she is working on applications of content-based retrieval in healthcare. Over the past 25 years, her research interests have been in a variety of areas relating to artificial intelligence, including computer vision, image and video databases, medical image analysis, bioinformatics, and signal processing. She has more than 100 refereed publications and more than 40 issued patents. Dr. Syeda-Mahmood has chaired numerous workshops and conferences including several early workshops that helped established the field of content-based retrieval and event recognition (Event ’01-‘04). She was the program cochair of CVPR ‘08. She has received several gold medals for academic excellence, including the Sir Akber Hyden Gold Medal from Osmania University for undergraduate education. She received the prestigious IBM fellowship during graduate school. She has received numerous awards for outstanding contributions to IBM Research over the years. She is a senior member of the IEEE.