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Nico Karssemeijer
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L. Morra, S. Delsanto, S. Agliozzo, R. Baggio, im3D S.p.A. Medical Imaging Lab. (Italy); E. Belluccio, Politecnico di Torino (Italy); L. Correale, im3D S.p.A. Medical Imaging Lab. (Italy); D. Genova, Institute for Cancer Research and Treatment (Italy); A. Bert, im3D S.p.A. Medical Imaging Lab. (Italy); D. Regge, Institute for Cancer Research and Treatment (Italy)

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7260 2N **Reduction of false positives by machine learning for computer-aided detection of colonic polyps** [7260-94]
X. Zhao, S. Wang, H. Zhu, Z. Liang, Stony Brook Univ. (United States)

7260 2O **Adaptive remapping procedure for electronic cleansing of fecal tagging CT colonography images** [7260-95]
L. Morra, S. Delsanto, im3D S.p.A. Medical Imaging Lab. (Italy); D. Campanella, D. Regge, Institute for Cancer Research and Treatment (Italy); A. Bert, im3D S.p.A. Medical Imaging Lab. (Italy)

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S. Gross, RWTH Aachen (Germany) and Univ. Hospital Aachen (Germany); T. Stehle, A. Behrens, R. Auer, T. Aach, RWTH Aachen (Germany); R. Winograd, C. Trautwein, J. Tischendorf, Univ. Hospital Aachen (Germany)

7260 2R **Combining heterogeneous features for colonic polyp detection in CTC based on semi-definite programming** [7260-98]
S. Wang, J. Yao, National Institutes of Health (United States); N. A. Petrick, U.S. Food and Drug Administration (United States); R. M. Summers, National Institutes of Health (United States)

7260 2S **Classification of colon polyps in NBI endoscopy using vascularization features** [7260-99]
T. Stehle, R. Auer, RWTH Aachen Univ. (Germany); S. Gross, RWTH Aachen Univ. (Germany) and Univ. Hospital Aachen (Germany); A. Behrens, J. Wulff, T. Aach, RWTH Aachen Univ. (Germany); R. Winograd, C. Trautwein, J. Tischendorf, Univ. Hospital Aachen (Germany)

7260 2T **Computer-aided detection of initial polyp candidates with level set-based adaptive convolution** [7260-100]
H. Zhu, Stony Brook Univ. (United States); C. Duan, Stony Brook Univ. (United States) and Peking Univ. (China); Z. Liang, Stony Brook Univ. (United States)

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A. S. Chowdhury, S. Tan, J. Yao, M. G. Linguraru, R. M. Summers, National Institutes of Health Clinical Ctr. (United States)

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F. Beyer, W. Heindel, Univ. Hospital of Muenster (Germany); D. Wormanns, ELK Berlin Chest Hospital (Germany)

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A. C. Jirapatnakul, A. P. Reeves, A. M. Biancardi, Cornell Univ. (United States); D. F. Yankelevitz, C. I. Henschke, Weill Medical College, Cornell Univ. (United States)

7260 2X **Evaluation of scoring accuracy for airway wall thickness** [7260-104]
B. L. Odry, A. P. Kiraly, C. L. Novak, Siemens Corporate Research (United States); D. P. Naidich, J. P. Ko, M. C. B. Godoy, New York Univ. Medical Ctr. (United States)

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W. H. Horsthemke, D. S. Raicu, J. D. Furst, DePaul Univ. (United States)

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L. Sørensen, Univ. of Copenhagen (Denmark); M. de Bruijne, Univ. of Copenhagen (Denmark) and Biomedical Imaging Group Rotterdam (Netherlands)

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R. Lieberman, Univ. of Southern California (United States); H. Kwong, Dept. of Health, Hong Kong Special Administrative Government (Hong Kong, China); B. Liu, H. K. Huang, Univ. of Southern California (United States)

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K.-C. Chang Chien, Institut TELECOM (France) and National Chung Cheng Univ. (Taiwan); C. Fetita, Institut TELECOM (France); P.-Y. Brillet, Avicenne Hospital (France); F. Prêteux, Institut TELECOM (France); R.-F. Chang, National Taiwan Univ. (Taiwan)

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B. M. Keller, A. P. Reeves, Cornell Univ. (United States); D. F. Yankelevitz, C. I. Henschke, Weill Medical College, Cornell Univ. (United States); R. G. Barr, Columbia Univ. (United States)

7260 33 **A hybrid lung and vessel segmentation algorithm for computer aided detection of pulmonary embolism** [7260-110]
L. Raghupathi, Siemens Information Systems Ltd. (India); S. Lakare, Siemens Medical Solutions USA, Inc. (United States)

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R. D. Ambrosini, Univ. of Rochester (United States); P. Wang, Univ. of Michigan (United States); W. G. O'Dell, Univ. of Rochester (United States)

7260 36 **Knowledge-based optimum feature selection for lung nodule diagnosis on thin section thoracic CT** [7260-113]
R. K. Samala, W. A. Moreno, D. Song, Y. You, Univ. of South Florida (United States); W. Qian, Florida Institute of Technology (United States)

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M. Kuwahara, S. Kido, Yamaguchi Univ. Graduate School of Medicine (Japan); H. Shouno, Univ. of Electro-Communications (Japan)

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J. Wang, Duke Univ. (United States); F. Li, K. Doi, The Univ. of Chicago (United States); Q. Li, Duke Univ. (United States)

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A. E. Tutac, Image Perception, Access and Language IPAL (Singapore) and Politehnica Univ. Timisoara (Romania); D. Racoceanu, Image Perception, Access and Language IPAL (Singapore) and Univ. of Besancon (France); W.-K. Leow, Image Perception, Access and Language IPAL (Singapore) and National Univ. of Singapore (Singapore); H. Müller, Univ. Hospital of Geneva (Switzerland) and Univ. of Applied Sciences, Western Switzerland (Switzerland); T. Putti, National Univ. Hospital (Singapore); V. Cretu, Politehnica Univ. Timisoara (Romania)

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V. V. Makkapati, Philips Electronics India Ltd. (India)

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V. Dixon, Tom Baker Cancer Ctr. (Canada); A. Kouznetsov, M. Tambasco, Univ. of Calgary (Canada) and Tom Baker Cancer Ctr. (Canada)

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F. Gómez, J. Villalón, R. Gutierrez, E. Romero, Univ. Nacional de Colombia (Colombia)

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J. Liu, D. W. K. Wong, J. H. Lim, H. Li, N. M. Tan, Institute for Infocomm Research (Singapore); T. Y. Wong, Singapore Eye Research Institute (Singapore) and National Univ. of Singapore (Singapore)

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X. Liu, Fourth Military Medical Univ. (China) and Tsinghua Univ. (China); H. Lu, H. Chen, Fourth Military Medical Univ. (China); L. Zhao, Xinhua Hospital, Shanghai Jiaotong Univ. (China); Z. Shi, Fourth Military Medical Univ. (China); Z. Liang, SUNY, Stony Brook (United States)

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P. Tolay, Indian Institute of Technology, Kharagpur (India); P. Vajinepalli, P. Bhattacharya, C. Firtion, R. S. Sisodia, Philips Electronics India Ltd. (India)

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G. Dougherty, California State Univ. Channel Islands (United States); M. J. Johnson, Kuwait Univ. (Kuwait)

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A. Kage, Fraunhofer-Institut für Integrierte Schaltungen (Germany); M. Raithel, S. Zopf, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); T. Wittenberg, C. Münzenmayer, Fraunhofer-Institut für Integrierte Schaltungen (Germany)

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Y. S. Jung, Seoul National Univ. (Korea, Republic of); Y. H. Kim, D. H. Lee, IntroMedic Co., Ltd. (Korea, Republic of); S. H. Lee, J. J. Song, J. H. Kim, Seoul National Univ. (Korea, Republic of)

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M. Acharyya, Siemens Information Systems Ltd. (India); J. Stoeckel, Siemens Computer Aided Diagnosis, Ltd. (Israel); D. M. S., Siemens Information Systems Ltd. (India)

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B. Giritharan, X. Yuan, J. Liu, Univ. of North Texas (United States)

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In Memoriam

Robert F. Wagner

1938–2008

A founding scientist and prolific contributor to modern medical imaging science and SPIE

Robert F. "Bob" Wagner was a tremendous innovator in the field of medical imaging and image assessment methodologies. He was a key figure in the creation of the SPIE Medical Imaging symposium. A SPIE Fellow since 1988, Bob was active on the program committee of the Physics of Medical Imaging conference at the Medical Imaging symposium, and author of numerous technical papers published by SPIE.

"The medical imaging community has lost one of its founding fathers and most highly regarded members," said Kyle Myers, director of the Division of Imaging and Applied Mathematics at the Center for Devices and Radiological Health (CDRH), U.S. Food and Drug Administration (FDA). "Bob's career was dedicated to the development of consensus measurement methods for the assessment of medical imaging systems, quantitative medical imaging and tissue characterization, and computer-aided diagnosis. He earned an international reputation in these areas and applied his expertise to a wide range of regulatory issues central to the FDA's mission. He enlightened the scientific community within the agency as well as the international scientific community through the many invited presentations and tutorials he gave in and outside of the FDA, his numerous publications, his many professional society activities, and his assistance in regulatory decision making."

At this 2009 Medical Imaging symposium, a joint keynote session hosted by the CAD and Image Perception conferences honored Bob's many contributions from the early 1970s to the present through a series of presentations by some of his closest collaborators.

David Brown (CDRH/FDA) recalled Bob's early years in the field, relating that after graduate and post-graduate work on the physics of nuclear interactions with radiation, Bob was hired by the Bureau of Radiological Health [a precursor to CDRH] to assess the dose reduction potential of radiographic intensifying screens made with phosphors developed in the color TV industry. Within three months he published a review of the relevant imaging literature from the medical, defense, consumer, and scientific communities, together with a charter for a laboratory program. Soon after, Bob introduced digital noise analysis to radiography, and showed that the new technology offered a 1.6- to 2.5-fold exposure reduction without compromising imaging performance. He then launched a program of inter-laboratory comparison of measurements on radiographic film samples that were circulated among fifteen commercial, government, and academic laboratories worldwide. In the process, he became the prime mover for work toward consensus methodology for quantitative imaging performance measurements.

Mike Insana (Univ. of Illinois at Urbana-Champaign) shared memories of his years as Bob's post-doctoral student, working with Bob on the statistical characterization of ultrasound images. He described Bob as an exemplary mentor who shared his passion and joy for science.

Myers agreed, "Bob's greatest legacy may be the many young scientists he nurtured, who either worked directly under his tutelage at the FDA or otherwise benefitted from his unfailing patience and unselfish ease of availability."

Harry Barrett (Univ. of Arizona) began his presentation by relating noise-equivalent quanta (NEQ)—a concept central to Bob's unified approach to objective image performance assessment—to historical information-theoretic methods for evaluation of imaging systems. Barrett went on to describe the many ways in which NEQ was extended to address problems beyond the simple signal-known-exactly, background-known-exactly (SEK/BKE) task.

Ken Hanson (Los Alamos National Lab.) described his years of collaboration with Bob. He said they worked together, first in the area of noise characterization of radiographic and CT images and later on the evaluation of images confounded by artifacts. In this latter work, Bob and Ken pioneered the application of a decision theoretic approach to the assessment of image reconstruction algorithms, demonstrating that the common mean-square-error metric did not predict visual task performance as measured by detectability.

Bob's contemporary work, as described by Myers, "involved the consideration of the random effects associated with multiple readers of medical images and the logical extension of this work to the problem of the evaluation of multiple competing classifiers in statistical pattern recognition. Bob tackled problems of increasing complexity over the course of his career, relying throughout on the application of a unified, decision theoretic framework. In the process he brought about consensus on the importance of a task-based approach to the objective assessment of imaging systems."

During more than forty years of professional life, Bob Wagner made numerous contributions to the field of medical imaging that significantly impacted academia, industry, and the FDA. His brilliant mind, incredible intuition, passion for science, sense of humor, charm, and warm friendship will be greatly missed.