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Image Perception, Observer Performance, and Technology Assessment

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Editors

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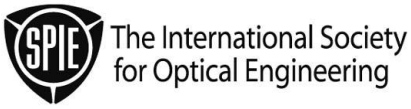

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SESSION 4 MODEL OBSERVERS I

SESSION 5 FROC, LROC, AND OTHER ANALYSES

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Aldo Badano, CDRH/FDA and NIBIB/NIH Joint Laboratory for the Assessment of Medical Imaging Systems (USA)
Kyle J. Myers, CDRH/FDA and NIBIB/NIH Joint Laboratory for the Assessment of Medical Imaging Systems (USA)

1 ROC Methods
Brandon D. Gallas, CDRH/FDA and NIBIB/NIH Joint Laboratory for the Assessment of Medical Imaging Systems (USA)

2 Harold Kundel Honorary Lecture and Image Perception
Elizabeth A. Krupinski, University of Arizona (USA)

3 Image Display
David J. Manning, St. Martin's College, University of Lancaster (United Kingdom)

Introduction

As part of the symposium of SPIE Medical Imaging 2007, the Image Perception, Observer Performance, and Technology Assessment Conference was held February 20 through 22, 2007, in San Diego, California. In the evening of February 20, the conference opened with a workshop entitled "Validation of models used in assessment of medical imaging systems." Aldo Badano and Kyle J. Myers, Center for Devices and Radiological Health of the U.S. Food and Drug Administration and the National Institute of Biomedical Imaging and Bioengineering of the National Institutes of Health, chaired the workshop. Seven other experts gave brief presentations and then joined in a spirited panel discussion. The panelists were Josep Sempau, Universitat Politécnica de Catalunya; David L. Wilson, Case Western Reserve University; Benjamin M. W. Tsui, Johns Hopkins University; Mathew A. Kupinski, University of Arizona; Predrag R. Bakic, University of Pennsylvania; Stephen Glick, University of Massachusetts Medical School; and Craig K. Abbey, University of California at Santa Barbara.

The workshop was hosted jointly with the Physics of Medical Imaging Conference. This was the first time that the two conferences collaborated in hosting a workshop on an area of research that intersects the interests of the attendees of both conferences. The workshop touched on a wide range of topics from simulation of electron transfer in complex imaging systems to prediction of human observer performance with mathematical models. The panelists highlighted the importance of validation for Monte Carlo simulations and mathematical models and they also showed the difficulties involved in performing such validation. Questions were raised during the discussion regarding whether modeling can reduce at least some of the burden of large-scale trials and it was clear that more research would follow to address those questions.

Harold L. Kundel, University of Pennsylvania, presented the keynote lecture. Before his lecture, Elizabeth A. Krupinski, University of Arizona, who has been involved in organizing this conference and the Medical Imaging Symposium for many years, presented Dr. Kundel with a plaque that designated the keynote lecture of this conference as the annual Harold L. Kundel, M.D., Honorary Lecture. This designation recognizes the outstanding and unique contribution Dr. Kundel has made to the field of medical image perception. Dr. Kundel's inaugural lecture was entitled "How to minimize perceptual error and maximize expertise in medical imaging."

There were 40 contributed oral presentations organized in eight sessions: ROC methods; FROC, LROC, and other analyses; image perception; image display; two sessions on model observers; and two sessions on technology assessment. Some of the papers on ROC analysis generated excitement and interests that undoubtedly will continue at future meetings. There was a strong presence of

papers on model observers, occupying two oral sessions in addition to the discussions made at the workshop.

Yulei Jiang
Berkman Sahiner