PROGRESS IN BIOMEDICAL OPTICS AND IMAGING
Vol. 24 No. 54

Medical Imaging 2023

Imaging Informatics for Healthcare, Research, and Applications

Brian J. Park
Hiroyuki Yoshida
Editors

19–21 February 2023
San Diego, California, United States

Sponsored by
SPIE

Cooperating Organizations
American Association of Physicists in Medicine (United States)
Radiological Society of North America
World Molecular Imaging Society
Society for Imaging Informatics in Medicine (United States)
International Foundation for Computer Assisted Radiology and Surgery
Medical Image Perception Society (United States)

Published by
SPIE

Volume 12469

Proceedings of SPIE, 1605-7422, V. 12469

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

Medical Imaging 2023: Imaging Informatics for Healthcare, Research, and Applications,
edited by Brian J. Park, Hiroyuki Yoshida, Proc. of SPIE Vol. 12469, 1246901
© 2023 SPIE · 1605-7422 · doi: 10.1117/12.2682178

The papers in this volume were part of the technical conference cited on the cover and title page. Papers were selected and subject to review by the editors and conference program committee. Some conference presentations may not be available for publication. Additional papers and presentation recordings may be available online in the SPIE Digital Library at SPIEDigitalLibrary.org.

The papers reflect the work and thoughts of the authors and are published herein as submitted. The publisher is not responsible for the validity of the information or for any outcomes resulting from reliance thereon.

Please use the following format to cite material from these proceedings:
Author(s), "Title of Paper," in *Medical Imaging 2023: Imaging Informatics for Healthcare, Research, and Applications*, edited by Brian J. Park, Hiroyuki Yoshida, Proc. of SPIE 12469, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 1605-7422
ISSN: 2410-9045 (electronic)

ISBN: 9781510660434
ISBN: 9781510660441 (electronic)

Published by
SPIE
P.O. Box 10, Bellingham, Washington 98227-0010 USA
Telephone +1 360 676 3290 (Pacific Time)
SPIE.org
Copyright © 2023 Society of Photo-Optical Instrumentation Engineers (SPIE).

Copying of material in this book for internal or personal use, or for the internal or personal use of specific clients, beyond the fair use provisions granted by the U.S. Copyright Law is authorized by SPIE subject to payment of fees. To obtain permission to use and share articles in this volume, visit Copyright Clearance Center at copyright.com. Other copying for republication, resale, advertising or promotion, or any form of systematic or multiple reproduction of any material in this book is prohibited except with permission in writing from the publisher.

Printed in the United States of America by Curran Associates, Inc., under license from SPIE.

Publication of record for individual papers is online in the SPIE Digital Library.

SPIE. DIGITAL LIBRARY
SPIEDigitalLibrary.org

Paper Numbering: A unique citation identifier (CID) number is assigned to each article in the Proceedings of SPIE at the time of publication. Utilization of CIDs allows articles to be fully citable as soon as they are published online, and connects the same identifier to all online and print versions of the publication. SPIE uses a seven-digit CID article numbering system structured as follows:

- The first five digits correspond to the SPIE volume number.
- The last two digits indicate publication order within the volume using a Base 36 numbering system employing both numerals and letters. These two-number sets start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B … 0Z, followed by 10-1Z, 20-2Z, etc. The CID Number appears on each page of the manuscript.

Contents

vii *Conference Committee*

AI MODELS AND PLATFORMS

12469 04 **User experience evaluation for MIDRC AI interface** [12469-2]

12469 05 **Mendability index: a new metric for estimating the effort required for manually editing auto-segmentations of objects of interest** [12469-3]

12469 06 **Utilizing data mining and deep learning methods on retrospective head and neck radiation therapy cases for decision support of individualized treatment planning** [12469-4]

AI BIASES AND DATA SECURITIES

12469 08 **A robust two-step adversarial debiasing with partial learning: medical image case studies** [12469-6]

12469 09 **Sequestration methodology in practice through evaluation of joint demographic distributions of 54,185 patients in the Medical Imaging and Data Resource Center (MIDRC) data commons** [12469-7]

12469 0A **Anonymization and validation of 3-dimensional volumetric renderings of Computed Tomography (CT) data using commercially available T1W MRI-based algorithms** [12469-8]

12469 0B **A standard informatics system and workflow to standardize DICOM data preprocessing at scale** [12469-9]

MULTIMEDIA DATA AND HYBRID SYSTEMS

12469 0C **Video health monitoring for cardiac arrhythmia detection in a real hospital scenario** [12469-10]

12469 0D **Respiration extraction and atrial fibrillation detection from clinical data based on single RGB camera** [12469-11]

12469 0E **Reliability estimation of armchair-based capacitive ECG using video-based pose estimation** [12469-12]

12469 0F **Development of decision support tools for biomechanics research utilizing the Integrated Biomechanics Informatics System (IBIS)** [12469-13]

12469 0G **Development of information system on occupational exposure** [12469-14]

12469 0H **A hybrid framework of traditional and deep learning segmentation methods with feature detection for Optical Coherence Tomography (OCT) images** [12469-15]

AUGMENTED REALITY AND THE DIGITAL OPERATING ROOM

12469 0J **Comparison of video capture cards for streaming real-time procedural imaging onto mixed reality headset** [12469-17]

12469 0K **A proposal for communication of intraoperative contextual information via DICOM unified procedure steps** [12469-18]

RADIOMICS

12469 0L **A pipeline for multivariate genome-wide associations studies with morphological brain features** [12469-19]

12469 0M **Predicting left/right lung volumes, thoracic cavity volume, and heart volume from subject demographics to improve lung transplant** [12469-21]

12469 0N **Deep-learning-based end-to-end scan-type classification, pre-processing, and segmentation of clinical neuro-oncology studies** [12469-22]

RADIOLOGY REPORTING

12469 0O **Radiology report generation using transformers conditioned with non-imaging data** [12469-23]

12469 0P **A generative-discriminative deep learning approach to classify radiology reports based on the presence of follow up recommendations** [12469-24]

POSTER SESSION

12469 0Q **Three-dimensional video of facial surface synchronized with videofluoroscopic swallowing study** [12469-25]

12469 0R **Machine-learning-based bpMRI radiomics for differentiation of prostate cancer in PSA gray zone cases** [12469-26]

12469 0S **Integrating deep learning algorithms for the lung segmentation and body-part-specific anatomical classification with Medical Imaging and Data Resource Center (MIDRC)** [12469-27]

12469 0T **Automated detection of colorectal polyps in photon-counting CT colonography (Cum Laude Poster Award)** [12469-29]

12469 0U **Electronic cleansing in photon-counting CT colonography by use of self-supervised 3D-GAN** [12469-30]

12469 0V **Video-based in-vehicle action recognition for continuous health monitoring** [12469-31]

12469 0W **A web-based radiomics module for image feature extraction for tumor characterization** [12469-32]

DIGITAL POSTER SESSION

12469 0X **Micro-nodule analysis by severity of pneumoconiosis using 3D CT images.** [12469-20]

Conference Committee

Symposium Chairs

Robert M. Nishikawa, University of Pittsburgh (United States)
Despina Kontos, University of Pennsylvania (United States)

Conference Chairs

Brian J. Park, Oregon Health & Science University (United States)
Hiroyuki Yoshida, Massachusetts General Hospital (United States)

Conference Program Committee

Peter R. Bak, McMaster University (Canada)
Po-Hao Chen, Cleveland Clinic (United States)
Tessa S. Cook, The University of Pennsylvania Health System (United States)
Thomas M. Deserno, Technische Universität Braunschweig (Germany) and Hannover Medical School (Germany)
Jessica Fried, Michigan Medicine (United States)
Steven C. Horii, The University of Pennsylvania Health System (United States)
Maria Y. Law, Hong Kong Sanatorium and Hospital (Hong Kong, China)
Anh H. Le, Roswell Park Comprehensive Cancer Center (United States)
Heinz U. Lemke, Computer Assisted Radiology and Surgery (Germany)
Brent J. Liu, The University of Southern California (United States)
Umber Shafique, Indiana University School of Medicine (United States)
Eliot L. Siegel, University of Maryland Medical Center (United States)
Wyatt M. Tellis, University of California, San Francisco (United States)
Shandong Wu, University of Pittsburgh (United States)