Bin Zheng, J Bioengineer & Biomedical Sci 2015, 5:1
http://dx.doi.org/10.4172/2155-9538.S1.002

OMICS International
conferenceseries.com

International Conference on
Significant Advances in Biomedical Engineering
April 27-29, 2015 Philadelphia, USA

# Development and evaluation of new quantitative imaging biomarkers for improving cancer screening efficacy

**Bin Zheng**
University of Oklahoma, USA

Although cancer screening is considered an effective approach to detect early cancers and reduce cancer mortality rates, the high false-positive recall rates substantially reduce the efficacy of current population-based cancer screening. Using conventional computer-aided detection (CAD) schemes also substantially increases false-positive recalls. In order to better address this difficult issue, we recently investigated several new quantitative image features or biomarkers aiming to assist improving efficacy of cancer screening. In this presentation the author will review and summarize our new approaches and recently experimental results when applying this new concept to breast cancer screening using either FFDM or DCE-MRI examination modalities. Unlike the previous lesion-based CAD schemes that primarily focused on detecting more positive lesions that may be missed or overlooked by radiologists with higher false-positives, we used lesion-free and multi-image based CAD approaches that only focus on the detection and analysis of global image features to predict near-term cancer risk and/or classify between the true- and false-positive recalls (or cases). For example, (1) using new CAD to analyze bilateral mammographic tissue density asymmetry, the computed odds ratios showed an increasing risk trend from 1.00 to 9.07 between positive and negative case groups. (2) Analyzing the global MR kinetic image features, a CAD scheme achieved an area under ROC curve of AUC=0.839. (3) Combing the global image features from four-view mammograms, CAD yielded AUC=0.793 in classifying 1052 recalled cases. These preliminary studies demonstrated feasibility of applying a new quantitative image analysis approach to potentially help establish more effective personalized cancer screening paradigm.

## Biography

Bin Zheng received his PhD from Department of Electrical Engineering, University of Delaware and had Postdoctoral training from Imaging Research Center, Department of Radiology at University of Pittsburgh. Currently, he is Professor at School of Electrical and Computer Engineering, Oklahoma TSET cancer research scholar at Stephenson Cancer Center, University of Oklahoma. His current research area focuses on the quantitative medical image analysis and computer-aided diagnosis. Since 1998 he has been served as PI in six NIH or DOD funded medical imaging related research projects. He is co-author of more than 100 papers published in the referred journals.

Bin.Zheng-1@ou.edu

## Notes: