Joint Department of

BIOMEDICAL ENGINEERING

UNC CHAPEL HILL | NC STATE UNIVERSITY

Coulter Seminar Series Presents

"AI in Breast Cancer Imaging"

Maryellen Giger, PhD
A.N. Pritzker Professor
Department of Radiology
University of Chicago

Maryellen Giger, Ph.D. is the A.N. Pritzker Professor of Radiology / Medical Physics at the University of Chicago. She has been working, for multiple decades, on computer-aided diagnosis /machine learning/deep learning in medical imaging and cancer diagnosis / management. Her AI research in breast cancer for risk assessment, diagnosis, prognosis, and therapeutic response has yielded various translated components, and she is using these "virtual biopsies" in imaging-genomics association studies. Giger is a former president of AAPM and of SPIE; and is the Editor-in-Chief of the Journal of Medical Imaging. She is a member of the National Academy of Engineering; Fellow of AAPM, AIMBE, SPIE, SBMR, IEEE, IAMBE; and was cofounder, equity holder, and scientific advisor of Quantitative Insights [now Qlarity Imaging], which produces QuantX, the first FDA-cleared, machine-learning driven CADx system.

ABSTRACT

Artificial Intelligence in medical imaging involves research in task-based discovery, predictive modeling, and robust clinical translation. Quantitative radiomic analyses, an extension of computer-aided detection (CADe) and computer-aided diagnosis (CADx) methods, are yielding novel image-based tumor characteristics, i.e., signatures that may ultimately contribute to the design of patient-specific cancer diagnostics and treatments. Beyond human-engineered features, deep convolutional neural networks (CNN) are being investigated in the diagnosis of disease on radiography, ultrasound, and MRI. The method of extracting characteristic radiomic features of a lesion and/or background can be referred to as "virtual biopsies". Various AI methods are evolving as aids to radiologists as a second reader or a concurrent reader, or as a primary autonomous reader. This lecture will discuss the development, validation, and ultimate future implementation of AI in the clinical radiology workflow.

Friday, September 4th
12:00 Noon

Seminar will be presented virtually via Zoom:
https://go.unc.edu/f3QHx