

*The Electrical and Computer Engineering Program presents
ECEN Seminar Series*

Advanced Imaging Methods for the Detection of Tissue Changes and Treatment Monitoring

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CBIM, Rutgers University, Piscataway, New Jersey, USA

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12 – 1 PM

Lecture Hall 238

Medical ultrasonography is an inexpensive, portable, safe, easy-to-use, and non-ionizing imaging modality. It uses high-frequency sound (ultrasound) to produce images of human organs. An ultrasonic transducer converts electrical signals into acoustic waves and transmits them inside the body. Over the past decades, ultrasonic imaging has emerged as a standard diagnostic technique within a broad range of clinical applications, e.g., cardiac, breast, abdominal, obstetric, and prostate

The presentation will begin by providing an introduction to medical ultrasound imaging. It will then summarize some of our works including a multi-feature quantitative ultrasound (QUS) method (based on spectrum analysis) and elastography to identify whether a breast lesion is malignant and to monitor the efficacy of neoadjuvant chemotherapy. Our methods have been found to outperform the conventional methods. Future directions include refinement of some features and extending the methods to new clinical applications.



S Kaisar Alam received his B.Tech (hons), M.S., and Ph.D. degrees from the Indian Institute of Technology, Kharagpur, India (1986), the University of Rochester, Rochester, NY (1991 and 1996), respectively. He was a lecturer at Bangladesh Institute of Technology, Rajshahi from 1986 to 1989. He was a postdoctoral fellow at the University of Texas Health Science Center, Houston from 1995 to 1998. Dr. Alam was a Principal Investigator at Riverside Research, New York from 1998 to 2013, working on a variety of research topics in biomedical imaging. At present, he is the Chief Research Officer at Improlabs Pte Ltd, an upcoming tech startup in Singapore. Since 2013, he has also been a visiting research professor at CBIM, Rutgers University, Piscataway, NJ.

Dr. Alam has been involved in biomedical research for over 26 years, with interests in diagnostic and therapeutic applications of ultrasound and optics and signal/image processing with applications to medical imaging. He has been most active in elasticity imaging and quantitative ultrasound, especially for breast cancer identification, noninvasive treatment monitoring, and prostate cancer detection. Dr. Alam has written over 40 papers in international journals and holds several patents. He is co-authoring the textbook Computational Health Informatics (to be published by CRC Press in 2016) and co-editing the 2-volume reference book on Tissue Elasticity Imaging (to be published by Elsevier in 2017). He is a Fellow of AIUM, a Senior Member of IEEE, and a member of Sigma Xi, AAPM, ASA, and SPIE. Dr. Alam has served in the AIUM Technical Standards Committee and the RSNA QIBA Ultrasound Coordinating Committee. He is an associate editor of Ultrasonics and Ultrasonic Imaging and a member of the editorial board of the Journal of Medical Engineering. Dr. Alam was a recipient of the prestigious Fulbright Scholar Award in 2011–2012.

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