

MAR16-2015-003961

Abstract for an Invited Paper
for the MAR16 Meeting of
the American Physical Society

Imaging and Analytics: The changing face of Medical Imaging

THOMAS FOO, GE Global Research

There have been significant technological advances in imaging capability over the past 40 years. Medical imaging capabilities have developed rapidly, along with technology development in computational processing speed and miniaturization. Moving to all-digital, the number of images that are acquired in a routine clinical examination has increased dramatically from under 50 images in the early days of CT and MRI to more than 500-1000 images today. The staggering number of images that are routinely acquired poses significant challenges for clinicians to interpret the data and to correctly identify the clinical problem. Although the time provided to render a clinical finding has not substantially changed, the amount of data available for interpretation has grown exponentially. In addition, the image quality (spatial resolution) and information content (physiologically-dependent image contrast) has also increased significantly with advances in medical imaging technology. On its current trajectory, medical imaging in the traditional sense is unsustainable. To assist in filtering and extracting the most relevant data elements from medical imaging, image analytics will have a much larger role. Automated image segmentation, generation of parametric image maps, and clinical decision support tools will be needed and developed apace to allow the clinician to manage, extract and utilize only the information that will help improve diagnostic accuracy and sensitivity. As medical imaging devices continue to improve in spatial resolution, functional and anatomical information content, image/data analytics will be more ubiquitous and integral to medical imaging capability.