



Jewish General Hospital
Lady Davis Institute for Medical Research



"Deep Learning Image Reconstruction: Compared and Contrasted with FBP and IR"

Timothy Szczykutowicz, PhD, DABR

Associate Professor, Departments of Radiology /
Medical Physics / Biomedical Engineering
University of Wisconsin
Madison, Wisconsin

Abstract

Ever wonder why radiologists complain about iterative reconstruction algorithms being "plastic" or "patchy"? What makes those algorithms produce such a noise texture? Now that the field of CT has deep learning based reconstruction, are all of these complaints a thing of the past? In this seminar we will discuss the performance of iterative, model based, and deep learning CT image reconstruction algorithms. We will approach this from a basic medical physics perspective and then show plenty of real clinical cases to drive home a complete understanding. We will discuss the differences in performance (TTF, MTF, NPS, contrast, noise) as a function of contrast level, dose, and tissue type for FBP, iterative, and deep learning-based reconstructions methods. The seminar will draw on the presenter's own research work, clinical experience, and contain plenty of community references to the latest literature. The attendee should be able to walk away from this seminar with a solid basis for understanding the most important facets of CT image reconstruction in the clinic.