Scotch Tape CT Image Quality Report Instructions
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Introduction

Accumetra has developed a new CT image quality analysis software service that can automatically process a CT scan of a calibration phantom, measure fundamental image quality characteristics of the scan, and produce a detailed CT image quality report. Reports contain quantitative information on expected performance when using the CT scanner and protocol for specific clinical tasks (e.g. detection, measurement of solid lung lesions). This capability is useful for understanding, monitoring, optimizing, and standardizing high quality CT scanner protocols across an institution or across sites in a clinical study. In particular, as institutions strive to lower radiation dose it is important to understand the tradeoff between radiation dose changes and the potential impact such changes may have on clinical task performance.

To demonstrate the utility of this new CT image quality assessment approach Accumetra has made available a free version of this service that works when provided with CT scans containing rolls of 3M Scotch Magic™ tape. The inner plastic core of a roll of scotch tape contains a plastic ring that has sufficient geometric and material properties to obtain an estimate of a CT scanner/protocol's performance, which works well to demonstrate the capabilities of this new service. Future versions of this service will use precision manufactured phantoms instead of scotch tape.

Here is how it works. A CT scanning site simply scans 3 new rolls of scotch tape with the protocol that they are interested in assessing and uploads the 3D DICOM dataset to Accumetra. Accumetra will then analyze the uploaded data and email a free CT image quality report back to the site, generally within a day. If this is done for more than one 3D DICOM scan the reports can one day be used to quantitatively compare one scanner/protocol versus another. Note that the maximum CT slice thickness and spacing that is supported with this demonstration prototype is 2.5mm at this time. This is an advanced prototype demonstration capability, so the results must not impact patient care in any way. In addition, you should expect changes/improvements to the CT image quality reports over time as the measurement and analysis methods continue to improve.

Instructions

1. Obtain three new rolls of 3M ¾ inch x 1000 inch Scotch Magic™ 810 tape. Used rolls of tape and other brands of tape should not be used as they may compromise the analysis.
2. Place one roll flat on the table and position it at scanner iso-center. It is recommended that you place a flat blanket underneath the rolls of tape for extra support.
3. Place another roll of tape flat on the right side of the table and a final roll on the table between the two rolls already placed. See the middle picture for positioning.
4. Set the reconstruction field of view to the full size needed to image a patient on the table with the protocol, including as many rolls of tape as possible.
5. Perform the CT scan and save the 3D DICOM series into a folder with a descriptive name.
6. Compress the folder with the CT DICOM data into a *.zip archive file.
7. Visit Accumetra's CT image quality report page and follow the instructions there to upload your *.zip archive file: http://services.accumetra.com/ctiqreport.php
8. A CT image quality report will be sent to the email address provided during data upload after automated image quality analysis is complete.

Additional Information

Feel free to contact Accumetra with any questions or comments you have on this free service, including how it can be improved. Send all enquiries to info@accumetra.com.

Note that the prototype quality assessment reports and the results obtained are for research and scientific purposes only at this time. The information should not be used for patient care.