Abstract:

Purpose: To introduce a preliminary study aimed at automating the detection and flagging of potential polyps as an enhancement to virtual colonoscopy.

Methods & Materials: The colonoscopy data sets were obtained using a Siemens Somatom 4 spiral CT scanner. Standard image acquisition parameters were used. The resulting data sets were processed using custom image analysis software running on a Sun Ultra 10 (440MHz) workstation. This software processed the DICOM images directly and automatically flagged potential polyps based on their size and morphology. By using the detection information obtained from the 2D slices it was possible to generate 3D models of the region around the potential polyps. These 3D models can be used in conjunction with the 2D information to provide a more informed basis for decision. In addition to standard 3D models, stereo (virtual reality) models were also provided to enhance visualisation.

Results: The image analysis software is currently configured to detect polyps > 5mm and can cater with several different morphologies. Current results indicate that the detection of true positives is good although the percentage of false positives is still quite high. It is intended to extend the functionality of the software to cater for all possible morphologies and reduce the number of false positives.

Conclusions: Automated flagging of potential polyps using image-processing software may provide an essential time saving tool for detecting colon cancer. This is achieved by removing the need to examine healthy segments of the colon, thus allowing the examiner to focus on the areas that require attention.