An Integrated Windows Software Solution for DICOM Information Processing and Visualization

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Abstract

The Digital Imaging and Communications in Medicine (DICOM) standard is widely adopted by the medical community for the purpose of storing, transmitting and viewing medical images. However there are few standard applications and open source solutions in C# programming language in this field, which makes difficult to integrate existing data processing libraries with DICOM software. This work proposes and describes the implementation of a general DICOM decoder application which provides the following capabilities: DICOM image decoding and visualization according to modality acquisition parameters; communication with PACS servers (DCM4CHEE freeware software); basic image processing functions as: window center and window width adjustments (aka brightness and contrast), image zooming, inversion, etc; 3D medical image reconstruction and visualization (surface rendering and multi planar rendering).