

Dynamic Web-Based 2D Medical Image Visualization and Processing Software

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Abstract : In the course of recent decades, medical imaging has been dominated by the use of costly film media for review and archival of medical investigation, however due to developments in networks technologies and common acceptance of a standard digital imaging and communication in medicine (DICOM) another approach in light of World Wide Web was produced. Web technologies successfully used in telemedicine applications, the combination of web technologies together with DICOM used to design a web-based and open source DICOM viewer. The Web server allowance to inquiry and recovery of images and the images viewed/manipulated inside a Web browser without need for any preinstalling software. The dynamic site page for medical images visualization and processing created by using JavaScript and HTML5 advancements. The XAMPP &apache server’ is used to create a local web server for testing and deployment of the dynamic site. The web-based viewer connected to multiples devices through local area network (LAN) to distribute the images inside healthcare facilities. The system offers a few focal points over ordinary picture archiving and communication systems (PACS): easy to introduce, maintain and independently platforms that allow images to display and manipulated efficiently, the system also user-friendly and easy to integrate with an existing system that have already been making use of web technologies. The wavelet-based image compression technique on which 2-D discrete wavelet transform used to decompose the image then wavelet coefficients are transmitted by entropy encoding after threshold to decrease transmission time, stockpiling cost and capacity. The performance of compression was estimated by using images quality metrics such as mean square error ’MSE’, peak signal to noise ratio ’PSNR’ and compression ratio ’CR’ that achieved (83.86%) when ’coif3’ wavelet filter is used.

Keywords : DICOM, discrete wavelet transform, PACS, HIS, LAN

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