

X-hance an interface that enhances x-ray images

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Abstract

To aid medical professionals in their timely and accurate diagnoses of patients, powerful and accurate diagnostic tools are required. Image processing software tools improve the quality and accuracy of x-ray images used in medical diagnoses. The scope of this project encompasses the design and use of X-hance, an interface created to enhance image quality issues of various medical images which are taken from the MedPix R- CME Cases Database. These images have some problems, such as blurriness, undefined or unclear edges, unfair distribution of contrast between bone and tissue structure, darkness, and bad tonal rendering. Our main purpose is to process these problematic images using different functionalities of X-hance. These functionalities are one push button to upload the unprocessed image, another push button to preprocess the image, and three sliders that can be used for adjusting signal equalization, tonal rendering, and display compensation. The advantage of using sliders in an interface is enabling the user to correct images by manually controlling the parameters of the algorithm when moving the sliders left or right and stopping at the desired position to obtain an improved quality of the x-ray image.

Keywords

Image Processing Toolbox, High Dynamic range HDR, Red Green Blue RGB.

Biography

Dr. Sarah Ali Dr. Ali is a clinical assistant professor in Engineering with a specialization in the field of biomedical engineering. Dr. Ali graduated in 2015 with a Ph.D. in electrical engineering at Laval University in Quebec City, Canada. Prior to joining Loyola University Chicago, Dr. Ali worked at Size Stream as a Scientist and software developer. Her focus was to develop algorithms for the 3D modeling of human bodies. She also had the opportunity to work at GE Healthcare where she developed software related to healthcare applications.

Designing software for medical device is very crucial in the field of healthcare. Dr. Ali is interested in investigating the recent technologies of processing medical images and designing software for medical devices. Her other interests are in computer vision, image processing and machine learning.