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**A Novel Low-Pass Filter to Enhance Bio-image Quality Using Numerical and Computational Simulations**<sup>1</sup> EDWARD CHOI, ANDREW KYUNG, Choice Research Group — For some bio-images obtained from tomography techniques for obtaining clear images, the imaging process involves more work than simple quantitative image analysis. Previous research, which suggests image quality enhancement via preprocessing, watershed segmentation, and morphological image processing, had minimal impact on image resolution. This study examines bio-image processes to propose a more effective algorithm for processing a bio-image. In this project, normal MRI image of a brain using raw frequency data is presented. Also a new low pass filters are introduced to assess different enhancement strategies, with the end goal of achieving improvement of image quality in a pixel scale. This enhancement process requires computational and mathematical techniques. This techniques are applied and tested to the bio-image obtained from diffuse optical tomography (DOT), which is an emerging medical imaging in which tissue is illuminated by near-infrared light from an array of sources. As an enhancement procedure, the application of transformations using unit impulse function, Gaussian function, and a proposed low-pass filter(LPF) is introduced in this paper. With the transformation and filtering technique, this paper determines a new algorithm that enhances bio-image quality.

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