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Study on the Spatial and Frequency Domain for the Enhancement of Medical Images Using the Fourier Transformation JI SOO HWANG, UC Berkeley, RICHARD KYUNG, CRG-NJ — To get the image from MRI, frequency information has to be transferred to the image using mathematical and computational transformations. Ample amounts of the frequency data can be obtained from the MRI process; however, not all the frequency information is needed to determine the final image. Often, the process of transformation from the frequency domain to the image domain requires time because inverse Fourier Transformation takes every frequency point to determine the final output image. However, the employment of a proper method using mathematical and statistical knowledge can result in reduced domains of frequency, which will be used to determine output images in an efficient manner. In this paper, K-space was constructed from the MRI image of the human organ using the MATLAB program. Different proposed filters were applied on the full K-space in order to find the most efficient filter, which can be used to produce the best MRI image. Many filters are good at reducing the size of K-space, but most of those filters had the unwanted ringing effect. New computational experiments were performed with several modified filters to reduce the ringing effect and improve the resolution of an MRI image to a degree, and finally proposed an efficient function as a new filter.

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